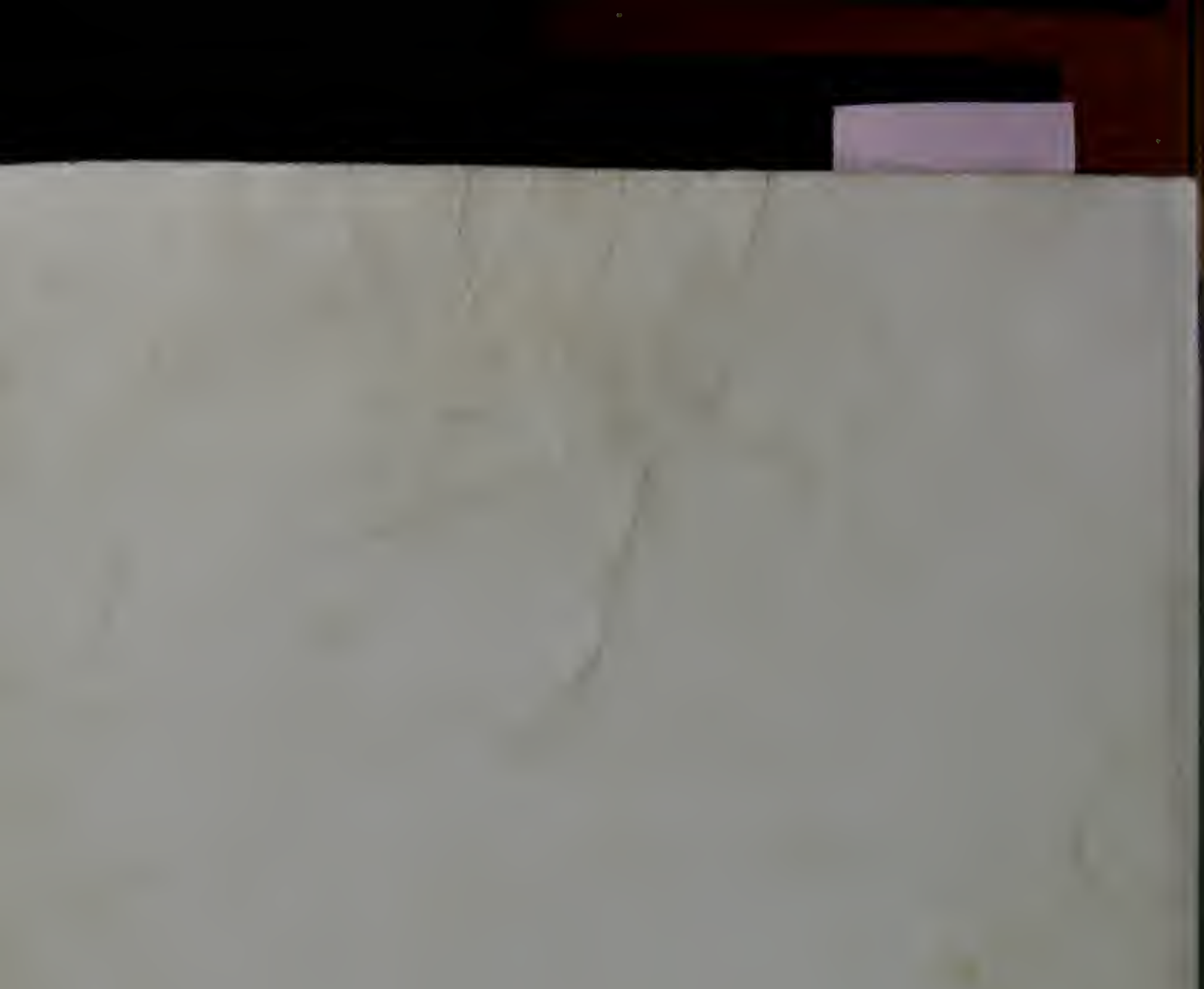

Report on the Gunshot and Sabre Wounds of Invalids sent to Fort Pitt during the years 1860 and 1861

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cted from the Statistical, Sanitary, and Medical Reports of the Army Medical Department for the year 1861

(Issued October 1863)

REPORT ON GUN-SHOT AND SABRE WOUNDS OF INVALIDS SENT TO FORT PITT DURING THE YEARS 1860-61 and 1861.

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General Remarks respecting the Cases of the year 1860.

During the year 1860, the number of patients who were admitted and passed through the surgical division of Fort Pitt, labouring under the consequences of *polemical* wounds and injuries were as follows:—

Under Vulnus Sclopetarium	89
„ Vulnus Incisum	5
„ Contractura	5
„ Amputatio	9
„ Cœcitas	1
Total	109

Of the above, 99, under vulnus sclopetarium, amputatio, and cœcitas, were gun-shot wounds, or the consequences of gun-shot wounds; 10, under vulnus incisum and contractura, were incised wounds, or their consequences.

Of the 99 invalids for gun-shot wounds, 3 were admitted twice,* leaving he actual number of individual invalids admitted during the year:—

Under Vulnus Sclopetarium, &c.	66
„ Vulnus Incisum, &c.	9
Total	106

Of these 106 invalids 31 were re-admissions among invalids who had been under treatment in Fort Pitt Hospital before the year 1860, commenced, and had either been discharged to modified duty, or had been sent for change of air to Yarmouth; 26 were of the former class and 5 of the latter. These 31 re-admissions have, therefore, to be deducted in computing the number of *fresh cases* admitted or, in other words, the number of invalids resulting from the campaigns in which their wounds were contracted.

The fresh cases appear thus:—

Vulnus Sclopetarium, &c.	96
Vulnus Incisum, &c.	10
Total	75

The following Table shows the campaigns from which the 75 fresh cases were derived:—

Campaign or Action.	Year.	Vul: Selop:	Vul: Incis:	Total.
Indian Mutiny ..	1857–9	55	8	63
Beyt	1859	6	1	7
Moultan	1848–9	1	0	1
Moodkee	1845	1	0	1
Chillianwallah ..	1849	1	0	1
Crimea	1855	2	0	2
Total ..	..	66	9	75

* It is necessary to make a clear distinction between the number of admissions which appear in the numerical returns and the number of individual patients admitted. This is not always done, and, when neglected, the omission leads to errors of a serious kind in the conclusions drawn from the returns referred to.

It at first appears strange that the campaigns in some instances should have been so far distant in time from the date when the soldiers who were wounded in them became invalided. This is particularly the case in respect to Moodkee, Moultan, Chillianwallah, and the Crimea, from which battles five admissions occurred. I will briefly refer to the cases of the invalids who had received wounds in these actions, and the lapse of the long intervals adverted to will then be explained.

Moodkee.—One admission. This invalid had remained at duty, notwithstanding contraction of the little finger, and numbness in the course of the ulnar nerve of the left arm, from injury by a musket-ball. He had received two other flesh wounds from musket-balls in the same action. He remained in the ranks until he had completed 21 years' service, and so gained the advantage of securing rather a better pension.*

Mooltan.—One admission. This invalid, Private Samuel Norton, 1st Battalion 60th Regiment, of 17 years' service, had received a perforating wound from a small iron ball on the inner side of the right thigh, and the bone had been grazed. Two pieces of bone subsequently exfoliated. In June, 1857, this soldier received a contusion from round shot on the left tibia, in action near Delhi, and was also wounded on the right side of the head by a fragment of telegraph wire, which material was frequently used as a projectile by the rebels. The cranium was wounded superficially , and the patient was rendered subject to frequent attacks of headache in consequence of this injury. In July 1857, he was wounded by a musket-ball in the back of the left shoulder at Delhi. The bullet lodged, and could not be discovered. The use of the left arm became partially impaired as a result of this wound. But he was chiefly invalided from India on account of chronic liver complaint and broken constitution from long service in a tropical climate.

Chillianwallah.—One admission. This invalid, a soldier of 14 years' service, had received in the battle of Chillianwallah flesh wounds through both legs. They were caused by one and the same ball. He had done his duty in the ranks from the time the wounds were first healed. Latterly the cicatrix, and parts adjoining, of the second wound of exit, that from which the ball was excised, had ulcerated, and this ulceration, from its obstinate character, had led to the man being invalided. The sore became cicatrized, however, in Fort Pitt, and he was again sent to duty.

Crimea.—Two admissions. Neither of these two invalids had been in Fort Pitt before. One case was, singularly enough, a compound fracture of the femur by a musket-ball. The wound had happened to a sailor of the Naval Brigade, in one of the batteries before Sebastopol, and although the man was invalided from the naval service in December 1855, he recovered sufficiently to enlist as a soldier in June 1859. I will allude to this case hereafter (Class 9, Lower Extremities.) The second admission from the Crimean campaign was the result of a shell wound, and the man was invalided on account of repeatep ulceration of the cicatricial structures.

I will now refer to the several classes of wounds, considering those result-

* The above tables and remarks refer only to those wounds, or their consequences, which have been the causes of men being "invalided" from the regiments as unfit for duty. But the wounds of all soldiers passing through the Invalid Depôt at Chatham, when these wounds have been received in action with the enemy, are now separately and regularly registered at Fort Pitt, although the soldiers may be invalided for causes unconnected with the wounds referred to. Thus, in the instance of a soldier who has received a wound, from which he no longer suffers any inconvenience, but who is invalided from an internal disease, as phthisis, or from the effects of long service, his wound is still registered. This is done with a twofold object—1stly, for the information of the Chelsea Commissioners and the benefit of the soldier, whose pension may be increased from the circumstance of his having been wounded in the public service; and, 2ndly, to assist in obtaining a correct and scientific history of the results of campaigns in regard to the injuries inflicted by war. Should the invaliding of the British army be ever carried on under one establishment, a plan which could not but conduce greatly to facilitating business and to increased economy in expenditure, such scientific information as is here referred to may be rendered still more complete than it can be under present arrangements.

ing from gun-shot first. The wounds have been classified according to the Tables in the Medical Regulations (Forms N and O, pp. 161, 162).

Class 1.—Wounds of the Head.

The only injuries of the head from gun-shot admitted during the year were, firstly, a simple flesh wound of the scalp; and, secondly, two cases in which wounds of the scalp were complicated with grazing of bone without depression. The projectiles in all three instances were musket balls. The wounds were healed, and no ill consequences had resulted, but the men laboured under other injuries, which led to their being invalided.

Class 2.—Wounds of the Face.

Three cases of gun-shot wounds of the face, received in action, were admitted. One of these was a Colour-Sergeant of the 1st Battalion, 8th Regiment, who was wounded by a musket ball at Delhi in 1857. The ball struck his left malar bone, penetrated inwards and downwards to the right side, and was excised from the right side of the neck. Some sequestra of the malar bone afterwards came away. Difficulty of deglutition resulted, and continued till the time of the man's discharge. He had completed twenty-one years' service. In a second case, a soldier of the 61st Regiment, Private Charles Southern, of 16 years' service, was struck in the right eye by a piece of shell, at Delhi. Suppuration and disorganization of the eye followed. He was admitted at Fort Pitt in September 1858, an artificial eye was supplied, and he was sent to duty. One year and ten months afterwards he was again admitted as an invalid, with defective power of vision (presbyopia) of the *left* eye. There was no retinal affection. He was also disqualified for service by want of power in the left wrist and hand consequent upon exfoliation of the bone from the lower part of the ulna, and adherent cicatrix. At the same time that the piece of shell had struck the eye, another fragment of the projectile had struck the wrist and injured the bone, and this had led to the disqualification last referred to.

The third case also occurred in a soldier of the 61st Regiment, a man of 16½ years' service, who was wounded at Nuzuffghur in August 1857, by a musket-ball, which entered a little below the articulation of the left lower jaw. According to statement, the projectile fractured the bone, passed backwards and downwards, and lodged in the muscles of the back of the neck. No indication of the fracture of the jaw could be detected at Fort Pitt; the ball could not be felt, nor had any impaired muscular action apparently resulted. The invalid was found fit for service, and discharged to duty.

In addition to the three polemical cases above referred to, there were three other gun-shot wounds of the face treated during the year, two being the result of an accidental discharge of one and the same rifle, the other being autophonic.

The accidental wounds occurred at ball practice on the 18th of July, 1860, to two men, Private William Cotton, and Private John Green, of the 1st Battalion, 4th Regiment. The rifle was fired at a distance of from eight to ten yards from the men wounded. The ball first struck Private Cotton, entering near the right corner of the mouth, in the upper lip, and was split against the lower jaw, which it fractured extensively. The upper jaw was also much injured. The greater part of the ball then made its exit about an inch below the tragus of the left ear, while a smaller portion lodged in the nape of the neck, whence it was excised. The larger portion of the projectile, after its escape, struck Private Green, who was standing near, at the symphysis of the inferior maxilla, and produced a comminuted fracture of the bone. The ball was discovered on the patient's admission at Fort Pitt, lying beneath the skin a little above the pomum Adami. When taken out, it was found to be much flattened out, and, lying near it, a small scale of lead, which had become detached. Extensive necrosis, and separation of many sequestra, occurred in both instances, but eventually complete union of bone and a favourable cure were obtained in each.

The autophonic case was that of Private Edward Stone, 5th Dragoon Guards, who attempted suicide by discharging a pistol under his chin, on the 15th of April, 1860, at Aldershot. The ball comminuted the lower jaw, to the left of the symphysis, fractured the corresponding part of the upper jaw and zygoma, and lodged. On the 2nd of May the cartridge paper was found loose within the mouth; but the ball was not discovered till the 25th of July, more than four months after the wound, when, on making an incision in the cheek to reunite a sinus, it was found embedded in the lower maxilla. Necrosis and exfoliation of portion of the jaw, and of the outer angle of the orbit, occurred, but the vision of the eye was not destroyed. Partial anchylosis of the temporo-maxillary articulation, and consequent impaired power of opening the mouth, led to his being invalided on the 23rd of November, 1860. Strong cicatricial bands within the cheek added to the limitation of the motion. Union of the fractured lower jaw was perfect. This case is another instance of the influence of example in suicidal cases. The day previously to this attempt at suicide, a man of the same regiment, employed on the same duty (regimental police), had destroyed himself by a rifle; and on this occasion the remark was made by Private Stone, "Don't be surprised if you hear the same of me one of these days;" but no attention was paid to it. They were both considered in their regiment to be steady soldiers, of good character and sober habits.

Class 3.—Wounds of the Neck.

Two cases were treated, both presenting features of particular interest.

The first case is that of Private Idem Sands, 1st Battalion, 60th Regiment, wounded at Delhi on the 14th of September, 1857, by a musket ball, which entered just external to the right sterno mastoid muscle, passed outwards and backwards, and made its exit about the margin of the trapezius muscle. The wound is reported to have taken on an unhealthy action, by which the cure was retarded; but, when admitted into Fort Pitt, on July the 20th, 1858, the wound was healed, and, not being thought to be of a disqualifying extent, the man was sent to the depôt of his regiment, to duty. On July the 25th, 1860, he was re-admitted as an invalid from Winchester, on account of inability to use his right arm properly. On examination, there was now found to be marked atrophy of the trapezius muscle, so that the scapula projected from the posterior wall of the thorax more than the scapula on the left side. The long scar remaining from the wound of exit was adherent to the skin and fascia, was tender to touch, and pain was felt shooting up the neck, and along the fore-arm to the points of the fingers. The supra-clavicular fossa became very deep when the arm was elevated, the cicatrix tense, and the scalenus could be distinctly felt, like a sharp ridge. The arm could not be elevated above a right angle with the trunk. Pain and tingling was also stated to be felt in the arm in damp weather spontaneously, and this, and other symptoms, led to the belief of nerve involved in the cicatrix being the source of irritation. The patient had suffered severely from intermittent fever and splenitis at Peshawur.

The second case was one of a ball passing between the trachea and œsophagus, without leading to any permanent lesion in either organ. The patient, Sergeant Joseph Plumford, 42nd Regiment, aged 28 years, was wounded at the attack of the Begum Kotee, Lucknow, on the 11th of March, 1858. The projectile, a round musket ball, entered an inch and a half above the sternal end of the right clavicle, passed behind the trachea, and was excised on the opposite side of the neck, behind the acromial end of the left clavicle. The leading symptoms after the wound recorded, were: discharge of blood from the mouth; aphonia, which lasted for some days; and the usual symptoms referable to injury of the nerves of the brachial plexus.

According to the Sergeant's own statement, there was escape of air by the wound of entrance, indicative of an opening into the trachea, but this is not mentioned in any of the invaliding documents. No disphonia, nor disability connected with the part of the neck wounded, existed at the time of his arrival at Fort Pitt in April 1859; but partial loss of sensation, with depressed temperature of the hand and of all the fingers existed. The hand and fingers were permanently fixed in a straight position; the thumb retained its normal

sensation and mobility. Any attempt to flex the fingers caused great pain in the course of the median nerve. He was discharged to modified service on the 3rd of May, 1859. He was, however, found unequal to this amount of duty, and was finally discharged on the 14th of October, 1860, the fore-arm being generally much wasted, and the middle, ring, and little fingers still anæsthetic, and extended. The forefinger had, in a great degree, recovered its normal power of motion, so that by its means, together with the thumb, he had a grasping power of some useful extent.

Class 4.—Wounds of the Chest.

Altogether there were seven gunshot wounds of the chest, three being re-admissions from among men who had been sent to modified duty. All the seven were wounds by musket balls.

Of the seven wounds, five were circumthoracie and non-penetrating one was penetrating, with the ball supposed to be lodged; and one perforating. Five were from the Indian Mutiny, two from Beyt. Of the cases, five were invalided from the service, two were sent back to duty.

Non-penetrating.—The following are brief abstracts of the cases of non-penetrating wounds:—

1*st Case.*—Private Michael O'Donnell, 78th Regiment, received a bullet wound, on the left side of the chest, in July 1857, at Cawnpore. The ball entered two inches above the inferior margin of the left pectoralis major muscle, and made exit a little external to the spinous process of the 6th dorsal vertebra, on the right side of chest. No professional history of the case was forwarded, beyond the statement, that he had been wounded "through the chest." There appears to have been copious hæmoptysis at the time of the injnry, and the man states that hæmoptysis continued at intervals for some time after; but as the ball in its passage injured the axillary plexus, which was evidenced by severe pain along the arm when he was wounded, and anæsthesia of the extremity remaining persistent for a considerable period afterwards, there can be but little doubt that this was a case of a ball making a circuit beneath the integuments. No rib had been injured, and the movements of the bony parietes of the chest remained unimpaired.

The frequency with which non-penetrating gun-shot wounds of the chest are accompanied with hæmoptysis, is well known. This patient was not invalided from India until the year 1859. He then joined the depôt of his regiment at Aberdeen, and was finally sent to Fort Pitt as an invalid, on account of chronic bronchitis and pulmonary emphysema. It was doubtful whether these symptoms were consequent upon or connected with the gun shot wound. He was discharged from the service chiefly on account of the pulmonary emphysema.

2*nd Case.*—Corporal Taylor Reid, 28th Regiment, of 17 years' service, was wounded by a musket ball at the assault of Beyt, on the 6th of October, 1859. The ball entered in front of the upper part of the sternum, apparently traversed round the left side of the chest, and made its exit posteriorly just above the fold of the axilla. On admission at Fort Pitt, where he came as an invalid from Bombay, he complained of pain around the upper part of the chest, in both clavicular and scapular regions; but, after full examination, no foundation could be detected for these complaints, and he was discharged to duty. No history of the injury was received from the regiment.

3*rd Case.*—This case was of interest, as the history sent home with the patient stated that the wound had been regarded as an undoubted perforating wound of the chest; while its progress, and the state of the chest on the soldier's arrival at Fort Pitt, left no doubt in the minds of any of the surgeons who examined the man, that the ball had only traversed that region external to the pleural cavity, although at the same time it had probably inflicted a severe injury to its contents.

The patient was discharged from Fort Pitt to his duty, at which he still remains.

The case is briefly as follows:—Private John O'Handlon, 28th Regiment, was wounded on the 6th of October, 1859, in the assault on the fortress of Beyt, by a matchlock ball. The projectile entered between the third and fourth ribs on the left side, about an inch external to the mammary line, and

made exit at the inferior angle of the scapula, from which a small splinter was detached. The history sent by the surgeon was as follows: "The ball entered the chest, passed directly through the lung, and emerged close to the inferior angle of the scapula. There was considerable hæmorrhage and hæmoptysis immediately after the injury, and urgent dyspnœa. Cough and febrile excitement were speedily developed. These symptoms remained more or less urgent for a fortnight, with copious muco-purulent and occasional bloody expectoration, and also great discharge of matter, with air bubbles, from the wound in the chest. During this time, while the wound remained anteriorly in a fistulous condition, and evidently communicating with a bronchus, the posterior opening speedily healed up. The progress towards recovery from this time, with the exception of some accessions of fever, was generally satisfactory." The date of healing of the anterior wound is not stated.

This patient was admitted at Fort Pitt on the 26th of August, 1860. He was then in good general health, and the condition of the chest was normal, with the exception of some pleuritic thickening at the neighbourhood of the wound of entrance. It was elicited, in tracing the history of the case, that in this instance also, as in the first case, the axillary plexus had been injured by the passage of the ball, and the admitting medical officer notes, on the invalid's admission at Fort Pitt: "He complains of uncomfortable feelings down the arm, but the motions of the joints are almost perfect." The ribs in the neighbourhood of the wound of entrance were uninjured, and the cicatrix of the wound itself was not deeply puckered, or adherent, as would have been the case had there been direct communications with the lung; and when the short time within which the posterior wound is described to have become closed is considered, there can be little doubt but that the ball had made a circuit external to the pleural cavity, and had not passed through the lung. This was confirmed by observing the probable direction the ball would take when the man placed himself in a position similar to that in which he was with regard to the enemy at the time he received the shot.

The discharge of matter with air bubbles from the anterior wound is quite reconcilable with the usual condition of the fistulous track of a gun-shot wound external to the chest, while sloughs are being detached: had there happened to have been forcible expulsion of air at each *expiration*, which is so strongly marked a symptom in a perforating wound communicating with a bronchus, a different diagnosis would have been necessary. Hæmoptysis, dyspnœa, supervention of pleuritis, are well known to be frequent accompaniments of gun-shot wounds of the chest, when no penetration deeper than the external parietes has occurred. The case was instructive, from the widely different nature of the diagnosis deduced from a study of its symptoms, and the condition of the chest, on the arrival of the patient at Fort Pitt, from what was formed of it when first treated; and more especially, because observation leads to the belief that gun-shot injuries to the chest *without penetration* are by no means unfrequently reported to be *penetrating* wounds, from the presence of symptoms which are really common, under certain circumstances, to both classes of injuries.

Examination after death occasionally affords an opportunity of demonstrating what close investigation is necessary for forming an accurate diagnosis of chest wounds. In the Annual Report of the 90th Regiment, for the year 1857, which includes the period of the siege of Lucknow, the following remark occurs by Surgeon Home, V.C.:—"I saw all the symptoms of a gun-shot wound of the lung, including copious spitting of blood, and intense dyspnœa, with subsequent inflammation of the lung, in a case where, after death, I ascertained that the bullet had simply coursed *outside* the chest, fracturing the scapula and one rib. I could not make out that any spicula even had penetrated the pleura. The case occurred in one of the native regimental followers. On the other hand, I may call attention to a very instructive preparation which has lately been added to the pathological collection, in the museum of the Army Medical Department, which shows a *perforating* wound of the left lung, where several symptoms, usually described as of necessity present in such injuries, were absent. The preparation presents a widely lacerated circular perforation, near the base of the lung, which is greatly shrunk in size, from the effects of compression. The wound was caused by an irregular gingall

ball, about one inch in diameter. The ball entered near the left mamilla, and made its escape by an opening one inch to the left of the spinous process of the ninth dorsal vertebra. The patient, Ensign ——, lived for twelve days after the injury; and chiefly from the absence of the symptoms of hæmoptysis, and of any marked dyspnœa, a medical officer of experience was led into the mistake of assuring the colonel commanding this officer's regiment that the lung had escaped from being wounded. Such apparent anomalies in the characters of these wounds are readily explicable on proper investigation.

4th Case.—Non-penetrating.—Ball reported to be lodged. Private Thomas Johnstone, 75th Regiment, aged 22 years, was struck by a musket ball in the chest, at the siege of Delhi, on the 8th of June, 1857. According to the history forwarded with this soldier, by the surgeon of the regiment, "the ball entered the thorax near the sternal articulation of the left second rib, and has since remained in the cavity of the chest."

The most prominent symptoms, after the wound, are described to have been great dyspnœa, and feeling of suffocation; bubbles of air were forced through the wound, and blood in considerable quantities was brought up, in fits of coughing. Nine days after the wound he was sufficiently recovered to be removed to Meerut. The wound healed, but he suffered from dyspnœa, and was invalided to England, and arrived at Fort Pitt on the 27th of April, 1859. He was then carefully examined by Surgeon Major Matthew, who arrived at the conclusion that the ball had most probably struck the sternum, and glanced off. The soldier at this time experienced but little inconvenience from the injury, and was sent to duty with the depôt of his regiment. He remained at duty until the 3rd of August, 1860, when, in consequence of hæmoptysis, he was admitted into his regimental hospital, and subsequently again sent as an invalid to Fort Pitt. He was admitted on the 9th of September, 1860. On examination of the chest, dulness on percussion was strongly marked in both clavicular regions, especially on the right side, and there were the other usual signs of tuberculosis. The patient was generally debilitated. The cicatrix of the wound of entrance was depressed, but not deeply puckered or inverted. The phthisical symptoms were most strongly marked on the right side, while the wound had occurred on the left, and there seemed to be little reason for associating the phthisis under which the man now laboured, and for which he was discharged from the service, with the gun-shot wound.

5th Case.—The following case of gun-shot wound of the chest also led to difference of diagnosis as to its nature. It was most probably a *non-penetrating* wound, with lesion of the pectoral contents by contusion, complicated with a phthisical diathesis. The invalid was Thomas McHugh, 1st Battalion 5th Regiment, aged 32 years, of 13 years' service. He was wounded by a musket-ball at Omreah, in Oude, on the 2nd of December, 1858. The surgeon, who forwarded an abstract history of the case, gave the following particulars:—"Private McHugh received a severe wound of the chest, penetrating under the left axilla, and wounding the lung. The ball lodged. He suffers from frequent attacks of dyspnœa. General health debilitated. Is unable to wear his belts and march at quick time in the ranks." He was invalided from India, and admitted at Fort Pitt, in April, 1860. Surgeon-Major Matthew then remarked, "The ball struck him three inches external to the inferior angle of the scapula, and appears to have passed backwards, striking the edge of the scapula, and glancing from it." A small piece of bone came away from the situation, about six weeks after the wound. Moreover, the position the patient was in, when he was struck, relatively to the fort from which the ball was fired, showed that the ball must have passed backwards, and could not have entered the chest through the axilla. The projectile was apparently diverted by striking the angle of the scapula, and probably became lodged in some part of the spinal muscles. The dyspnœa was no doubt chiefly due to the development of phthisical symptoms, which were of constitutional origin, as there was evidence of tubercular softening in the apices of both lungs.

6th Case—Perforating.—Private Thomas Powell, 9th Lancers, was wounded at Delhi, in the right side of the chest, on the 14th of September, 1857, by a musket ball. The projectile entered between the second and third ribs, an inch and a half below the sternal end of the clavicle, and passed out posteriorly through the right scapula, beneath its spine. The injury, according to Surgeon

Todd, 9th Lancers, was followed by violent inflammation of the lung. It was elicited from the patient that the wound was accompanied by hæmoptysis, which continued for some time; that blood, mixed with air, escaped from the front wound; and that several fragments of bone were removed from the posterior wound during the progress of cure. He arrived as an invalid at Fort Pitt, in June, 1859, and upon examination pleuritic thickening of the upper part of the right side of the chest, and some limitation in expansion as compared with the left side, were detected; but the man's general health was good, and the wound not being supposed to be of a disqualifying extent, he was sent to try duty at his depôt. He was found unserviceable by the regimental authorities, chiefly on account of dyspnœa, was again invalided in February, 1860, and ultimately discharged from the service. The force with which the ball appears to have wounded this patient, the projectile passing directly out, and the symptoms, though only very briefly recorded in the medical history from India, seemed to point to the conclusion that the lung had been traversed. If so, it is an additional example of the greater frequency of recovery from penetrating wounds of the apex,—like those of the periphery of the lung—where also vessels are of small calibre,—as compared with wounds of those parts of the organ which more nearly approach the larger ramifications of the vessels at its root.

Order 5, Perforating.—There was some doubt respecting the true nature of the following case. The injury led to extensive abscesses external to the chest, and the effects of these, together with the supervention of phthisis in both lungs, led to the patient's discharge from the service. It has been classed as a perforating wound of the chest, in accordance with the report of Surgeon Laing, 23rd Regiment, who forwarded an abstract history of the case, as follows:—

"Sergeant James Dawson, 23rd Regiment, received a gun-shot wound at the siege of Lucknow, in March, 1858. The ball entered in front, above the clavicle, passed completely through, injuring the upper lobe of left lung, rib, and scapula. Great constitutional disturbance ensued, complicated by the intercurrence of endemic fever. Some pieces of bone (fragments, apparently, of scapula) have been removed, and others are still likely to come away. Disqualified for military duties by loss of power of left arm."

On the invalid's admission into Fort Pitt, on the 2nd September, 1859, the cicatrices showed that the ball had entered 1½ inch above the left clavicle, and had made its exit just above the spine of the scapula, on the same side. The following remark was made at the time by Surgeon-Major Matthew:—"It is difficult to see how in this case the ball could have injured the lung. The posterior opening is now healed, but the anterior one is still open, and this wound contains a small portion of dead bone" Mr. Matthew concluded it to be a "perforating wound of the neck, with contusion of rib." The patient remained under treatment in Fort Pitt for nearly three months, and was discharged on the 5th December, 1859, to modified duty. On the 23rd of September, 1860, he was re-admitted, being found unfit even for modified duty. He was then in a very reduced state, and stethescopic examination showed advancing tuberculosis of both pulmonary apices. There was great thickening of the integument in the supraclavicular region, where a succession of abscesses and sinuses had occurred. There was also much induration of the subcutaneous tissue over the left scapula, and an open unhealthy sinus existed under the inferior angle of the scapula. A cicatrix also existed over the twelfth rib, showing that pus had found its way beneath the integuments to this spot. The scapula was bound down to the chest by adhesions, so that the movements of the arm were greatly impeded. He was discharged from the service on the 30th of October, 1860.

Class 5.—Wounds of the Abdomen.

No case of this class was admitted during the year.

Class 6.—Wounds of the Back and Spine.

Only one case of this class occurred. The cervical portion of the spine was involved in the instance referred to. Private Benjamin Ritchie, 78th Regiment, was struck in September, 1857, at Lucknow, by a musket-ball, which entered

the left side of the neck, on a level with the hyoid bone, an inch external to the median line. It passed backwards, and lodged apparently somewhere in the neighbourhood of one of the upper cervical vertebræ. Immediately on the receipt of the wound, he fell down, having lost all control over his limbs, and expectorated a quantity of blood, both at the time and at intervals after falling. The upper and lower extremities remained paralyzed and anesthetic for a fortnight, when he gradually recovered the use of his limbs. He was invalided home, and admitted into Fort Pitt in April, 1858. At that time he could not move his head laterally, except to a small extent to the left side; but kept his head bent forward towards the chest. In consequence of this position, the spinous processes of the sixth and seventh cervical vertebræ projected more than was normal. An incision was made, on the supposition that the ball might be lying in this situation; but it could not be found. The man was retained above two months under observation, but all attempts to discover the site of the ball failed. Eventually he was sent to duty with his depôt, the injury not having been regarded as disqualifying. He was re-admitted, however, on the 1st of October, 1860. There was no improvement in the man's condition at this time; but, on the contrary, absorption seemed to be going on in the bodies of the fourth and fifth cervical vertebræ, the spinous processes of which were now also projecting. There was, also, difficulty of deglutition, and pain on pressure on the left side of the projecting cervical vertebræ. The inability to straighten the neck continued, and he was unable to bear any weight upon his head. The invalid was consequently discharged from the service. Had the ball lodged in the body of the fourth or fifth cervical vertebra in this case?

Class 7.—Wounds of the Perinæum, &c.

None admitted.

Class 8.—Wounds of the Upper Extremities.

Twenty-seven cases of gun-shot wounds of the upper extremities were admitted during the year. Six of these were of Order 1, or "simple flesh contusions and wounds; seventeen of Order 4, "with compound fractures of one or more long bones;" one of Order 5, "with compound fracture of carpus and metacarpus;" and four of Order 6, "dividing and lacerating the structures of the fingers or thumbs." The wounds of Order 1 were chiefly of interest on account of their consequences, viz.: contractions or atrophy, causing the men to be invalided to Fort Pitt. The axilla was the part injured in two instances. In one case—that of a sergeant of the 90th Regiment, at Lucknow—a musket-ball passed through both folds of the axilla; but, though numbness and loss of power of the arm resulted as an immediate effect of the injury, these symptoms gradually subsided. While under treatment in India for the wound, contraction of the elbow-joint occurred from disuse, and he was invalided home on this account. After admission at Fort Pitt he was placed under chloroform, the contraction reduced, and he was discharged for duty with the motion of the elbow-joint nearly perfectly restored. In the second instance, the posterior fold of the axilla was struck by a piece of timber detached by a round shot, in July, 1857, at Lucknow. The insertions of the latissimus dorsi, teres major, and long head of the triceps muscles, appeared to be chiefly injured by the contusion. Adhesions, leading to contractions, were established; and loss of power of elevating the arm from the side led to the patient being invalided and discharged from the Army in March, 1860.

The third case of this order also presented features of interest. A private of the 52nd Regiment was wounded at Delhi, by a musket-ball through the left deltoid muscle. The humerus was apparently uninjured. He was invalided home on account of general loss of power in the arm. The history forwarded with the patient did not afford further details. On admission into Fort Pitt, the deltoid muscle was found to be atrophied in its central portion, being firmly bound down to the humerus on each side of the bicipital groove. The groove itself could be distinctly traced by the finger. The bicipital tendon was firmly bound down in the groove, there being no movement of it when passive motion of the arm was made. This mechanical impediment to the play of the tendon had led to atrophy of half the belly of the biceps muscle. From the

lesions described, there resulted partial inability to flex the fore arm upon the upper arm, and also loss of deltoid power of elevating the humerus. This latter was in some degree compensated by increased development of the upper portion of the trapezius muscle on the same side. This soldier was sent to the depôt of his regiment, and recommended for modified duty ; but not retained He was ultimately discharged from the army in October, 1860.

In each of the two remaining cases of this Order, a musket-ball had passed through the interosseous space of the fore arm. The injury had led to contraction of the elbow-joint and wasting of the brachial muscles in one instance, and to contraction of the middle and ring fingers in the second. Both soldiers had to be discharged from the service in consequence of these contractions.

The sixth was a simple flesh wound in the upper arm and calls for no remark.

The situation of the compound fractures (which were all instances, with one exception, of complete fracture) in the seventeen cases of Order 4, of this class, is shown in the following table :—

Humerus..	9
Humerus and Scapula	1
Radius	1
Ulna	3
Scapula	1
Clavicle	1
Clavicle and Scapula	1
Total	17

All these injuries were caused by musket balls, with the exception of one which was caused by a fragment of shell. This was the case in which there was only partial fracture. The piece of shell entered and lodged near the insertion of the deltoid muscle ; at the same time breaking off several splinters of the bone, which were removed. An adherent cicatrix resulted, and pain was caused on elevating or rotating the arm. There was no wasting of the muscles, and the pain complained of appeared to be exaggerated. This patient was dismissed to modified duty ; but sent back, and eventually discharged from the service.

The usual causes of invaliding in these injuries were loss of power in the extremity—resulting firstly, from injury to nerves, inducing loss of sensation, atrophy, and contractions ; or secondly, from binding down of muscles and other tissues by firm adhesions in consequence of the inflammation attendant upon the original wounds, or from cicatricial adhesions to bone after the removal of necrosed sequestra ; or, thirdly, from anchylosis of joints, when the fractures occurred near the articular extremities of bones. In one instance only—in one in which the fracture occurred in the clavicle—was the discharge of the patient from the service due to non-union of the fractured bone.

One case afforded an example of fracture, and at the same time splitting of the ball and injury in a double direction. Sergeant S. St. John, a healthy young soldier of the 28th Regiment, was wounded at the storming of the Fort of Beyt, on the 6th of October, 1859, by a musket-ball, which struck him on the ulna of the right arm, about four inches below the olecranon. He was loading his musket at the time he was hit, so that the bent position of the arm explained the injuries which followed. The ball fractured the ulna, and was itself also split into two parts ; one section of the ball passed out close to the external condyle of the humerus, apparently injuring the capsule of the joint in its passage ; the other section, running up through the soft parts, passed out about five inches above the elbow. Great inflammation, both of the joint and of the upper arm, followed. Amputation was several times contemplated, in consequence of the profuse suppuration and impairment to general health with which it was accompanied ; but eventually the sergeant recovered with anchylosis of the joint and some wasting of muscles. He retained fair power of moving the fingers.

One case, in which the humerus was fractured three inches and a half below the acromion process of the scapula, near the insertion of the deltoid muscle, was accompanied with contusion of the chest and also of the lung, evidenced by hæmoptysis at the time of the injury. The ball, after fracturing the humerus,

passed through the axilla, bruising the brachial plexus, and causing numbness of the arm and hand, and emerged through the scapula, near its inferior angle. Impaired power of raising the arm from muscular contractions, and binding down of the scapula by adhesions, were the causes for which this soldier was invalided. All paralysis had disappeared, and stethoscopic examination showed that the condition of the lung which had been injured was everywhere normal at the time of the invalid leaving Fort Pitt.

In another instance, an ordinary musket-ball injury of the scapula was followed by such close adhesions of the sub-scapular muscle to the walls of the chest, that certain movements of the corresponding extremity were greatly impaired ; so much so, as to unfit the patient for the duties of a soldier.

The instances of wounds in which the bones of the hand and fingers were involved do not call for special remark. When once a soldier has been wounded in these situations, it can rarely happen that the practice of conservation will leave the patient capable for the duties of a soldier, however favourable, in a surgical point of view, the result may be. This is especially the case in wounds of the right hand. The fascial contractions and thecal adhesions which usually follow such injuries, even under the most favourable circumstances of union, sufficiently explain the consequence described. In one of the instances included in this number, the invalid suffered from constant wearing pain in the course of the ulnar nerve, after amputation of the little finger. The pain was so great and the irritation so constant, by day and night, slight as its origin appeared to be, that the patient was greatly reduced in general health. The cicatrix was opened, and a portion of it, suspected to be the part in which nerve was involved, from its special tenderness, was excised. The result was most satisfactory, for total relief from the pain followed. On examination by the microscope, it was ascertained that the part excised consisted chiefly of nerve-fibre enclosed in cicatricial tissue.

Class 9.—Wounds of the Lower Extremities.

The number of admissions for injuries of the lower extremities was nearly the same as the number in the upper extremities, viz., 28. Of these, 21 were admitted for the first time at Fort Pitt, and 7 were re-admissions. Of the 7 re-admissions, 4 were men who had been sent to try modified duty, and 3 were patients returned from the Convalescent Hospital at Yarmouth.

The following is the distribution of the 28 cases of this Class, according to the Orders of Inspector-General Taylor's Classification :—

Order 1. Simple Flesh Contusions and Wounds ..	17
„ 2. Contusions with Partial Fracture	1
„ 4. „ with Compound Fracture ..	8
„ 5. Penetrating Tarsus or Metatarsus	2
Total	28

The following shows the distribution, according to the regional divisions of the lower extremity wounded :—

Thigh	13
Leg	12
Foot	3
Total	28

The simple flesh wounds require little remark. One of them affords an instance of lodgment of the ball for 17 months, at the expiration of which time it was discovered and extracted

One case of a bullet wound, followed by sloughing, presented features of interest. Private James Cosgrave, of the 93rd Regiment, was struck by a bullet on the outside of the right thigh, at the taking of Lucknow, on the 11th of March, 1858. The ball passed through the muscles, but at the same time drove in before it the barrel of his uniform sporeen, or purse. Mortification (hospital gangrene ?) followed, extending so deeply as to expose the bone, a layer of which exfoliated. He was invalided in consequence of the loss of muscular substance in the external vastus and crurœus muscles, in which there

was a deep, but not adherent, puckered cicatrix, 3½ inches long by 1¼ inch broad. Contraction of the knee had been induced by preponderant action of the flexor muscles.

In a second case, occurring in Private James Hogan, 64th Regiment, in which sloughing had followed a bullet wound nearly in the same situation, at Lucknow on the 16th of November, 1857, the patient was detained in hospital at Fort Pitt and Yarmouth for sixteen months, by obstinate ulceration at the seat of injury. The sore ultimately became cicatrized, and although there was some loss of substance and stiffness of the limb, the man was supposed to be capable of light duty, and discharged with this view.

Atonic ulceration of an obstinate character also existed in a third case, that of Private F. Whittaker, 34th Regiment, in which a wound from grape-shot, received at Cawnpore on the 28th of November, 1857, in the calf of the right leg, had been followed by extensive sloughing. This patient was two years under treatment in the Convalescent Hospital at Yarmouth; but all remedies, including the use of actual cautery, failed to induce healthy action in the sore.

In another case of simple flesh wound, the same ball had passed through both thighs, at their posterior aspect.

In these flesh wounds, the causes of invaliding were chiefly contractions following cicatricial adhesions, loss of muscular power, or neuralgia consequent upon injury to nerves. In some instances the complaints, especially as regards pain, may have been to a certain extent exaggerated. Army Surgeons frequently meet with very great difficulty in arriving at a just conclusion as to the real amount of disability which exists in these cases, for it is the object of the soldier to quit the service, and to have the advantage of the pension which is invariably given to a man disabled by a gun-shot wound received in action. In the following case there seemed no doubt of the reality of the symptoms complained of. Private Thomas Hemmingham, of the 1st Battalion, 20th Regiment, was wounded by a musket ball in the middle of the right thigh, immediately over the sartorious muscle. It passed directly backwards, and was excised from the posterior aspect of the limb. The wound cicatrized without any special symptom. The patient suffered from neuralgic pains down the inner aspect of the thigh and leg, as low down as the ankle. He compared the pain to a succession of sudden smart shocks, particularly on the occurrence of changes of weather. The symptoms were supposed to be attributable to injury of the saphenous nerve, or to its having become, perhaps, involved in the cicatrix of the wound.

The case of Order 2 was one in which the internal malleolus of the right leg was grooved by a musket ball at Delhi, in September 1857. The cicatrix was adherent to the bone, in which a depression, indicative of loss of substance, existed. The internal structure of the joint itself was not affected, but its mobility was impaired, by the contraction of its cicatrized integuments.

In the 8 cases of Order 4, viz., those complicated with compound fracture, the situations were the following:—

Trochanter Major	1
Shaft of Femur (upper third)	1
,, ,, (lower third)	1
Head of Tibia	1
Shaft of Tibia	2
Shaft of Fibula	1
Tibia and Fibula	1
Total	8

In the case in which the trochanter major was injured, the bullet had fractured the process superficially. Exfoliation had followed, but the wound was cicatrized on his admission into Fort Pitt. There was wasting of the glutœal muscles on the same side, and the patient laboured under such impaired power of rotating the thigh outwards, that he had to be discharged from the service.

The case of gun-shot fracture of the femur in the upper third occurred in Private John Ashworth, 53rd Regiment, who was discharged to modified duty from Fort Pitt, on the 6th of September, 1858. His case will be found recorded

among the ten cases of gun-shot compound fracture of the femur with recovery in the Army Medical Reports for 1859, page 319. In that record it was inadvertently stated that this patient was discharged to pension in July 1859. He remained at modified duty until November the 13th, 1860. When invalided at this date, he complained chiefly of suffering great pain on exertion, but there were no obvious reasons to justify this complaint. The muscles of the limb were well developed, and it is probable the symptoms were exaggerated for the purpose of escaping from further service.

The next case, one of compound fracture of the femur in the lower third, was alluded to at the commencement of this part of the Report, under the heading "Crimea." Several points of interest are presented by it, and I, therefore, give it in detail.

Private Phillip Cooper, 58th Regiment, aged 27 years, was invalided from Sheffield, in consequence of inability to march, the result of a gun-shot wound. This invalid was wounded by a rifle shot whilst in the Naval Brigade before Sebastopol, in September 1855. The injury produced was a comminuted fracture of the lower third of the femur of the right side. The ball passed in at the inner and anterior surface of the thigh, three inches above the knee-joint, and passed out in an oblique direction at the outer and posterior portion of the limb, about an inch below the level of the wound of entrance. He was in hospital upwards of two months, during which time several pieces of bone came away. In December of the same year, the wound of exit was still open, but the bone had become united, so that he could bear the weight of his body on the limb. He was then discharged from the naval service. In June 1859 he had so far recovered, that he was able to enlist in the 58th Regiment. He, however, states that, during the interval between the date of his discharge from the Naval Brigade and the time of his enlistment in the army, he had been obliged to go into the Middlesex Hospital, where he underwent an operation. The bone was cut down upon, and several dead pieces were taken away. The wound soon healed, and he felt no inconvenience from it whatever until July 1860, a year after his enlistment. He then began to feel pains in the limb, which he attributed to rheumatism. This pain was increased after marching, and he states he had to fall out on many occasions. He continued to suffer from a feeling of stiffness in the knee, the pain during walking became increased, and at last he was obliged to go to hospital. At the time of his admission into the regimental hospital, he was suffering from great pain in the limb, general swelling of the thigh, rigors at night, loss of appetite, thirst, and all the usual evidences of the formation of a deeply seated abscess. The posterior wound after a time opened, and the discharge of some unhealthy pus, which followed, gave him relief from the constant pain he had been enduring.

On the man's admission at Fort Pitt, on the 31st of October, 1860, the wound had been open three months, and its appearance led to the supposition that a portion of dead bone was becoming detached, although none could be felt on examination by the probe. An adherent cicatrix, 5 inches in length, and 2½ inches in breadth, existed on the inner aspect of the thigh, apparently the result of the incision made at the Middlesex Hospital. There were several openings anteriorly, situated about the junction of the lower and middle thirds of the femur, and towards the inner side. The man was of a strumous diathesis, and, according to his own account, his mother and several of the family had died of consumption. He was found unfit for service, and discharged as an invalid on the 5th of December, 1860.

This case was felt to be especially worthy of notice, while the invalid was at Fort Pitt, not only as an instance of recovery after so serious an injury as a gun-shot fracture of the femur by a rifle bullet, but also from the fact of the man having been passed as a recruit notwithstanding the evidences of the cicatrices of the wound, and of the incision made for the removal of the necrosed bone. Since his discharge from the hospital, I have had a conversation with the medical officer who passed him for a recruit, and the circumstance of his being accepted for a soldier, which was inexplicable before, at once was rendered clear. The disability had not been overlooked; but, at the urgent request of the Commanding and some other officers of the regiment, the medical officer had been induced to pass him, on account of his value as a

cornet player for the band. Promise was at the same time made that he should be relieved from carrying a knapsack, or from any exercise which called for more than the most ordinary exertion. It is a striking example, however, of the fruitless result of making any compromise of the kind in the medical province of the duty of recruiting.

Head of Tibia.—The case in which the head of the tibia was wounded occurred at Delhi, in June 1857. The ball first struck the bone near its tubercle, and was then deflected round its head upwards and to the inner side, and made its exit at a distance of 3 inches from the wound of entrance. The surface of the bone was grooved by the projectile. The joint was unopened, but inflammation of the synovial capsule had followed, and impaired power both of flexion and extension resulted. All movements of the joint were accompanied with a remarkable amount of sound like the creaking of new leather.

Shaft of Tibia.—One of these cases is worth notice from the situation in which the ball became lodged. The wound occurred in Private James Kerry 2nd Battalion Rifle Brigade, in Oude, on the 12th of April, 1859. He was struck by the ball in the middle of the right tibia. The bone was fractured at the part struck, and the ball lodged. Four months afterwards the ball was discovered near the insertion of the tendo-Achillis, in the hollow space between it and the calcaneum, and was excised from this situation. Union of the fractured bone was effected; but the patient suffered afterwards from necrosis of the tibia and consequent lameness.

Shaft of Fibula.—Some of the complications of this wound render it worthy of notice. Private James Ryan, 1st Battalion 13th Regiment, while on sentry at Allahabad, on January the 28th, 1858, was wounded by a musket ball, which passed through the calf of the right leg, just below the fleshy part of the gastrocnemic muscles. In making its exit it inflicted a partial fracture of the fibula. The wound healed, but was followed by severe neuralgic pain, probably from the perineal nerve being involved in the injury. This pain continued to distress him at intervals up to the time of his discharge from the service. Contraction of the muscles of the calf, and persistent extension of the foot, ensued in the course of cicatrization of the wound. To remedy this defect, the tendo-Achillis had been subcutaneously divided before the invalid arrived at Fort Pitt, but he remained disabled in consequence of loss of power in the foot and ankle-joint, and from general wasting of the muscles of the limb.

Tibia and Fibula.—This case presented no peculiarities.

Order 5, Wounds of the Foot.—In one of these cases considerable difficulty was experienced in extracting the ball, which was deeply and firmly embedded in the astragalus of the right foot. The extraction was finally effected by means of a "screw tire-balle." Surgeon Marlow, M.D., who forwarded a report of the case, wrote as follows:—"It was found impossible to extract the ball by ordinary means. Fortunately an instrument made by Savigny, in the form of a screw, with a silver canula, was procured, and passed down upon the bullet, The screw wormed its way into the lead without the employment of any power, took a firm hold, and but for the extreme tightness with which the projectile was held, would have extracted the ball altogether. The great force found necessary for overcoming this resistance, however, drew the instrument out of the lead; but, in doing so, the bullet was lifted out of its bed, and thus was afterwards capable of being extracted without much difficulty." The injury occurred in Private Peter M'Cormack, 28th Regiment, at the assault on the fortress of Beyt, in 1859. Considerable local inflammation and constitutional irritation followed, but the foot was saved with partial stiffness of the ankle-joint and wasting of muscles.

In the second case, the ball passed through the metatarsus, fracturing the third and fourth metatarsal bones. The fractures became united, and the wound ultimately cicatrized, but considerable tenderness of the plantar surface remained.

Class 10.—Wounds of the Larger Arteries.

No wounds of this class were admitted.

CLASS 11.—WOUNDS WITH DIRECT PENETRATION OR PERFORATION OF JOINTS.

Two cases have been returned under this class, but both appear to admit of doubt as to the classification having been correct. The first case is that of Private George Dudley, 53rd Regiment, who was wounded in Oude, on the 27th of April, 1859, over the right ankle joint, it was supposed, by a musket ball. The following remark is taken from the history of the case forwarded from India :—"The wound was for the most part only a contusion of the skin, but there wsa a small irregular opening, through which, apparently, a jagged piece of metal had passed, and from which synovial fluid exuded in considerable quantities."

Surgeon Major Matthew, who saw this soldier when admitted into Fort Pitt, in March, 1860, concluded that the joint had probably not been opened, but that the synovia referred to had escaped from the sheath of one of the external tendons, to which the cicatrix was still adherent. The patient asserted the joint was stiff and painful, but there was no evidence to confirm this, and the man was discharged to regular duty, which he has since continued to perform.

The second case was stated to be a gun-shot wound through the left elbow. The history sent with this patient was very meagre, and the fact that penetration had really occurred, when the joint was injured, did not appear to have been established by any proof. Partial anchylosis of the joint, wasting of the muscles of the forearm, and loss of power of the hand, resulted in this case.

CLASS 12.—WOUNDS OF NERVES, UNCONNECTED WITH FRACTURE OF BONE.

Four of this class have been admitted ; in one case, the sciatic nerve, and in three others, branches of the anterior tibial nerve, were the nerves injured.

Wound of the Sciatic Nerve.—Private John Ralph, 28th Regiment, was wounded at the attack on Beyt, in 1859, by a musket ball, which entered near the fold of the left natis, just below the level of the coccyx. The ball lodged, and the seat of lodgment could not be detected. The symptoms disabling this soldier were wasting and loss of power in the left lower extremity, occasional severe cramps and shooting pains, in the course of the sciatic nerve, and its branches.

Anterior Tibial Nerve.—The following are brief reports of the three cases under this head :—

Case 1.—Private Edward Brennan, 88th Regiment, aged 23 years, was wounded at Cawnpore, on the 29th November, 1857, by a musket ball, which entered the cente of the posterior aspect of the calf of the right leg, passed forwards through the interosseous membrane, between the tibia and fibula, and made its exit in front. Numbness, coldness, and œdema of the foot, wasting of the muscles of the leg, and constaut pain in the neighbourhood of the wound, aggravated on changes of weather, were the consequences of this injury, and caused the soldier to be discharged from further service.

Case 2.—Private Edward Pearcey, 53rd Regiment, was struck through the calf three inches below the popliteal space, and just behind the fibula of the right leg, by a musket ball, at Delhi, in July, 1857. The bullet passed through the interosseous membrane, and escaped in front. Numbness of the dorsum of the foot, and inability to bear pressure of the body in walking, stiffness and difficulty in flexing the foot, general wasting of the muscles of the leg, were the symptoms presented, on the man's admission at Fort Pitt. He was discharged as an invalid.

Case 3.—Private James Mullin, 32nd Regiment, was wounded at Lucknow, on the 13th of July, 1857, by a musket ball, which entered the popliteal space one inch to the inner side of the outer ham-string, passed forwards, and escaped by the side of the patella. The peroneal division of the popliteal nerve was evidently injured. Immediately after the injury, loss of power over the foot, and contraction of the flexor muscles of the leg occurred. The permanent results were wasting of the leg, weakness of the muscles supplied by the anterior tibial nerve, excessive hyperœsthesia of the skin on the outer half of the leg,

coldness, lividity, and numbness of the foot; the numbness, however, changing to a sensation of burning pain, when the limb became warm in bed.

Amputations.

Nine amputations after gun-shot injuries were admitted. They were, in respect to situation, as follows:—

Shoulder-joint	1
Humerus	2
Fore-arm	1
Fingers	4
Total	9

They require no remark. There were also four amputations after sabre wounds, viz.:—

Thigh, junction of upper and middle third	1
Fingers	3

The case of amputation of the thigh is worthy of notice. The subject of this operation, a strong, powerful man, Private H. Addison, 43rd Regiment, aged 38 years, had served upwards of 18 years in the East Indies. When engaged in action with the enemy, on the 2nd of January, 1859, near Cottee, he received several sabre wounds, and, among others, one which severed the ham-strings of the left leg, and penetrated the knee joint. In consequence of this injury, amputation of the thigh was performed at the middle third, by the circular method. The ligatures came away at the usual time, but great muscular retraction took place; the bone protruded, there was profuse discharge from the stump, and the man's health began to fail; it was therefore deemed necessary, on the 1st March, 1859, to open the parts, and to remove about two inches of bone. After this, the stump went on favourably, and a month afterwards was perfectly healed. Thus it was that the stump presented the condition of an amputation at the junction of the upper and middle third, a position for the operation which was not understood, as the sabre cut was at the knee joint, until the explanation was obtained from the medical history, which did not reach Fort Pitt until some time after the arrival of the patient. Besides the wound in the leg just described, Private Addison received at the same time five other sabre cuts. These were all on the left forearm and hand. One of them caused a compound fracture of the ulna, the bone being completely divided by the sabre. This severe injury healed very favourably; the only disability which remained was diminished power of flexion of the fingers, from their flexor muscles having been partially divided.

Sabre Wounds.

Eight men were invalided for the direct consequences of sabre wounds. They require no remark, with the exception of one, in which the musculo spiral nerve was divided by the sabre, leading to paralysis of the parts supplied by this nerve.

The sabre wounds were in the following situations:—

Head	1
Upper extremity	7

Five of the latter were on the left arm, received when this extremity was held up, to protect the head and body.

General Remarks respecting the Cases of the Year 1861.

During the year 1861, the number of patients who passed through the Surgical Division of Fort Pitt, labouring under the consequences of gun-shot injuries, was 60. Of these were:—

Polemical	58
Accidental	1
Self mutilation	1
Total	60

None of these 60 were admitted more than once in the course of the year.

Fifteen of the polemical cases were re-admissions from among men who had been under treatment in Fort Pitt at previous periods, and discharged to modified duty, and one case was a re-admission, but of a peculiar kind; leaving, therefore, 42 primary admissions out of the total number (58) polemical invalids admitted. In the instance of the re-admission last referred to, the patient, who had been wounded at both the battles of Alma and Inkerman, was discharged as a pensioner in 1855; but re-enlisted in 1860, with a view of completing twenty-one years' service, and gaining an increase to his pension. His case will be alluded to under "Wounds of the Lower Extremity."

The following Table shows the localities of the military operations in which the 42 freshly-admitted invalids received their wounds. The 16 re-admissions just referred to are not included in this Table; they have been already accounted for in previous returns, viz., 2 in the Crimean returns, and 14 in returns of the Indian Mutiny.

India, 1857, 1858, and 1859	15
Beyt, 1859	1
Burmah, 1856	1
Crimea, 1854 and 1855	6
China, 1860	9
New Zealand, 1860 and 1861	10
Total	42

Of the six campaigns referred to in this Table, two appear for the first time, viz., China and New Zealand. The late war in China has only led to 9 men, from the regiments of Cavalry and Infantry engaged, being invalided for polemical wounds: a remarkably small amount, considering that, among the European troops of the expeditionary army, during the time the force was employed in the field, from the 1st of August to the 15th of November, 1860, there were 122 admissions into hospital, for wounds received in action. This number is independent of 34 others, who either died in hospital from the effects of their injuries, or were killed in action with the enemy. (*See* Army Medical Reports, 1860, Statistical Branch, p. 106.)* The inference is, that the wounds inflicted by the Chinese were generally of a slight nature. It does not seem probable that the number of invalids for wounds received in this campaign will be increased by any fresh accession, as all the invalids despatched from China after the conclusion of the war have long since arrived in England.†

* The discrepancy between the number of wounds in the Expeditionary Force shown in the Statistical Returns above referred to, and the number shown in the "Medical History of the War in the North of China," by Inspector-General Dr. Muir (*see* Reports 1860, p. 383, and elsewhere), evidently arises from the fact of many of the wounds included in the latter being of too slight a nature to require treatment in hospital.

† Non-commissioned officers and men of the Royal Artillery invalided for wounds received in action do not pass through the General Hospital at Fort Pitt, and are not, consequently, included in this report. It appears, however, from returns in this office, that four artillerymen have been invalided, and finally discharged, in consequence of wounds received in action in China, viz.:—

Driver Francis Wells had the metacarpal bone of thumb fractured by a matchlock ball at the capture of the Peiho Fort, on the 21st of August, 1860. One piece of bone came away, and the wound healed in about six weeks, but the use of the hand was so impaired by the injury as to unfit him for military duty. He was consequently discharged the service with a pension.

Gunner Edward Casey had his left arm amputated in consequence of a severe injury inflicted by a round shot at Peiho Fort, on the same occasion. He made a good recovery, and was also discharged with a pension.

Gunner John George Haro had his right thigh shattered by a round shot in the attack on Tauku, on the 14th of August, 1860. Amputation was performed on the field, and the man made a good recovery, and was eventually discharged the service. The site of the operation is not specified; but as the thigh is stated to have been shattered, it was probably high.

Gunner Solomon Morton was wounded by a matchlock ball on inner aspect of right thigh, close to knee-joint, on the 12th August, 1860, at Sinho. He believes the ball still remains in the limb. There is a small cicatrix on the outer aspect of the right thigh, close to the knee-joint, where an irregularity in the surface of the bone, per-

The war in New Zealand has furnished 10 invalids for polemical wounds. In the Statistical Report for 1860, New Zealand, page 99, it is shown that 82 soldiers were admitted into hospital for wounds received in action with the natives; and that 40 died, 36 being killed in the field, and 4 while under treatment for the consequences of their wounds. The proportion of deaths to wounds is unusually great, and is the more remarkable from the nature of the enemy with whom the troops were brought into collision. It is not improbable that more invalids, from among the troops wounded in the recent hostilities, may hereafter arrive from this distant colony. Of the 10 admitted into Fort Pitt, 9 were discharged from the service, and 1 still remains under treatment, but is likely to be able to rejoin his corps for duty.

The following shows the disposal of the total 58 admissions of invalids for polemical gun-shot wounds :—

Discharged with Pension	52
„ to Duty	5
Remaining at Fort Pitt	1
Total	58

I will briefly refer to the cases included in these returns, under their respective classes.

Class 1.—Wounds of the Head.

Five cases of this class were invalided, three being cases of injury to bone without depression, and two supposed to be accompanied with depression.

Of the invalids for wounds of the head *without depression*, the cause of unfitness in one was persistent headache and vertigo, particularly on stooping, or on unusual exertion. The patient was wounded by a grape-shot at Delhi in 1857. There was a slight adherent cicatrix at the seat of injury, near the right parietal bone.

The second case presented some features of interest. It was as follows :—Private James Newman, 40th Regiment, was wounded in the attack on the pah at Waitara, on June 27, 1860, by a round musket ball, which passed through his forage cap, and struck him obliquely on the forehead, about two inches above the right supra-orbital ridge, above the frontal sinus, and a little to the right of the mesial line. A jagged oblong wound of the integuments, about two inches in length, resulted; and the outer table of the os frontis was observed to be fissured, but there was no depression. The man appears to have been comatose for a short time after the injury. On recovery, finding himself alone, he managed to creep through the high fern to camp. None of the usual signs of cerebral lesion were observable after his arrival at the field hospital; his only complaint was loss of sensation on touching the scalp for some distance above and in the neighbourhood of the wound There was no headache, excepting when he coughed, or otherwise jerked himself Several fragments of the bone subsequently exfoliated, and a puckered, depressed cicatrix, into which the end of the thumb could be inserted, took place. When invalided home from New Zealand, the symptoms noticed by the invaliding surgeon were, "dimness of vision of the right eye, accompanied with pain in the head." Considering the close neighbourhood of the wound to the organ of vision, it seemed not unlikely that a fissure, or other injury of the retina, might have been caused by the stroke of the projectile, but ophthalmoscopic examination at Fort Pitt showed that no lesion of this structure had resulted. The imperfect vision was attributable to hypermetropia, doubtless of congenital origin; and, on fully questioning the patient, he admitted that vision in this eye had always been weak and imperfect. Headache, vertigo, and other cerebral symptoms rendered him unfit for service.

The third case was as follows :—Private William Perkins, serving with the 2nd Battalion, Rifle Brigade, was wounded on the capture of the rifle

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ceptible to the touch, exists. Discharged the service in consequence of the existence of persistent "stunning pain" in the leg from the knee downwards, and of lameness consequent on apparent shortening of the limb.

pits before Sebastopol, in April 1855, by a musket ball over the right parietal bone, near the junction of the coronal with the sagittal suture. He was rendered insensible by the injury. He remained under treatment in his regimental hospital until June the 12th, and during this period several small pieces of bone were removed. From June until the latter end of July he was at Scutari, where the wound became closed. After joining his depôt in England, he was employed only in light duties, or as an officer's servant. The principal symptoms which caused him to be invalided were,—local tenderness about the cicatrix, inability to wear a shako without oppression to his head, occasional headaches, and vertigo increased on stooping or subjection to excitement. On admission to Fort Pitt, on August the 8th, 1861, in addition to these symptoms, he stated that he had constantly a fixed pain below the surface of the wound, as if something were pressing him there, and that the degree of this pain varied with changes in weather. The cicatrix of the wound, which was about two inches in length, was considerably depressed, doubtless from exfoliation of the outer table. Such a case as this, after the lapse of time which had occurred before the soldier was invalided, might easily lead to the diagnosis of its having been one of fracture with depression, if judgment were only formed from feeling the condition of the bone and its cicatricial investment, for it exactly simulated such an injury, on examination by the finger.

The two cases stated to have been accompanied *with depression*, are worthy of brief notice. Private William Thompson, 35th Regiment, aged 40, was wounded in the head at the sortie on the advanced works in the right attack before Sebastopol, by a piece of masonry moved by round shot. He was at the time in the Russian graveyard in the Karabelnia ravine. A depression of the right parietal bone is stated to have been caused by this injury ; but, strange to say, no urgent symptoms followed, and, wishing to avoid going into hospital, he remained at duty. It seems not improbable in this case that the depression must have been confined to the outer table. The patient was afterwards again wounded at the assault of the Redan in September 1855. He had his right arm forcibly twisted inwards, and elbow-joint severely contused, by the fragment of a ladder which was broken by grape-shot. The external lateral ligament of the elbow was apparently ruptured. The following is a description of the appearance of the elbow-joint, recorded on the man's admission into Fort Pitt :—"The fore arm, when extended, is in the position of adduction, and at first sight gives an impression that the external condyle had been fractured, and was dislocated outwards. There has never been fracture of any part of the joint. During flexion, the adduction gradually yields. The olecraunon and internal condyle appear rather nearer in a line with each other than they appear in the arm on the opposite side." Although the use of the arm was partially impaired by this injury, this soldier was so anxious to remain at his duty, that he was discharged to join his depôt. It seems not unworthy of mention, as an instance of repeated escapes from hazardous service in the field, that this soldier served subsequently with the 35th Regiment during the mutiny in India, and was one of the very few survivors of the disastrous attack in the Jugdespore jungle, in the expedition under Captain Le Grand, of that regiment, in 1857. He was afterwards invalided from India on account of ophthalmia contracted in the country.

The second case also presents several points worthy of notice. Private Thomas Lappington, 46th Regiment, aged 36 years, under three years' service, was wounded on the vertex of the head, before Sebastopol, in 1856, by a fragment of a shell, which exploded in the air, over a boat in which he was employed at the time coaling Her Majesty's steamer "Sampson." He was then a sailor in the merchant service. The wound was about three inches in length, a little to the left of the sagittal suture, near its junction with the coronal suture. According to statement, he was insensible for several days after the injury. The parietal bone was fractured, and some fragments were removed by the captain of the merchant vessel to which he belonged. He was not attended by any surgeon. He resumed his duty in less than a month, but a discharge was still escaping from the wound, and continued to do so up to the time of his return to Dartmouth, five months afterwards. In January, 1859, he enlisted in the 46th Regiment, the wound on the head being healed, and unnoticed at the time of enlistment. In October, 1859, he left England

for India, and during the passage exposed himself considerably to the sun, while helping to work the ship. Pain in the head recurred, with tenderness and tumefaction at the site of the wound; symptoms of abscess followed; and eventually the old cicatrix became re-opened, and a large portion of necrosed bone was exposed and removed. He was invalided from India, where he was greatly affected by the sun, on account of frequent attacks of cephalalgia, and fits of an epileptoid character. Very moderate quantities of alcoholic liquors excited him violently. The wound was again healed on his arrival at Chatham, but the cicatrix was so tender that he could not bear any pressure on the part. The cerebral symptoms continued, but in a modified degree. There was no return of the fits while he was at Fort Pitt. While in India he had lost all the hair from his head.

Class 2.—Wounds of the Face.

Three wounds of the face occurred. In one instance the wound was on the left side of the face, and caused by a pistol ball at Lucknow. The alveolar process of the jaw was fractured, and the ball lodged beneath the zygoma, whence it was extracted three months afterwards. Necrosis of a portion of the alveolar process, with loss of two molar teeth, and a bicuspid followed. There was also partial loss of hearing on the same side. This patient was discharged, having completed twenty-one years' service. The next case was similar; the left upper maxillary bone was fractured by a fragment of shell. Union took place without loss of bone, but all the teeth on that side became carious. Hearing and vision on the same side were both impaired. On opthalmoscopic examination of the affected eye, small deposits of pigment were observed overlying the retina, probably the consequences of ecchymosis, and there was general haziness of this structure. The dioptric apparatus of the eye was normal.

The third case was remarkable—perhaps unique, as I cannot find that any similar one has been recorded. The injury was followed by total dumbness, without any direct lesion of the tongue, larynx, or those structures which are chiefly concerned in vocalization. The patient, Private James Davis, 1st Dragoon Guards, a stout, healthy soldier, was struck just below the centre of the lower lip, during a charge of his regiment, on the 21st of September, 1860, at the general action of Pal-i-chou, near Pekin, by a small matchlock ball, weighing 7 drachms. The ball penetrated, carried away part of the alveolar process, 4 teeth, viz., 2 incisors, 1 canine, and 1 bicuspid, on the left side, travelled downwards behind the symphysis, clearing away the origins of the genio-hyo-glossi muscles in its passage, and lodged in the soft tissues of the floor of the mouth, below the frænum-linguæ. According to the history of the case, loss of the power of articulation immediately followed the wound, and never returned in the slightest degree, either in China, or during the voyage home to England. The ball was not removed till the twenty-third day after the injury; it was then extracted from within the mouth.*

When this patient was examined in Fort Pitt, the inferior maxillary bone was found to be a little thickened at the seat of injury, viz., at the symphysis, and for about an inch and a half of the left side of the body of the bone. The power of opening the mouth was slightly more limited than natural. The gum was sunk at the place from which the alveolar process had been removed by the projectile. The tongue appeared to be somewhat wasted, and its movements, upwards towards the palate, and forwards towards the lips, rather more limited than natural. There was no evidence of muscular paralysis. The sense of taste was unimpaired, nor was there any loss of ordinary sensation. The larynx seemed unaffected. The usual laryngeal sounds could be uttered, but none of their modifications necessary for speech could be effected. The power of whistling was gone. It did not seem clear to what special cause this total deprivation of the power of articulation was due. Neither injury to the hypo-glossal nerve, if such had occurred, nor the separation of the genio-hyo-

* The man had the ball in his possession at the time he was in Fort Pitt. He would not part with it, and a cast was, therefore, taken of it and placed in the museum. It shows accurately enough the alterations of form and furroughs of surface caused by collision with the bone (Specimen No. 3698.

glossi muscles, seemed sufficient to explain such a total loss of speech, for no similar result has been noted after any of the numerous gun-shot wounds of the jaw, or surgical operations performed upon it, as far as surgeons have recorded the cases. After the closest investigation at Fort Pitt, there did not appear to be any grounds for supposing that the soldier was feigning his disability. Several surgeons, and, among others, an eminent surgeon, in civil practice in London, expressed doubt as to its genuineness, and I felt, although satisfied myself that the symptoms were genuine, that other surgeons hearing of the case would equally have doubts on the subject. I therefore wrote, some time after the patient left Fort Pitt, to a surgeon in the neighbourhood of the place where the man had settled as a pensioner, for information regarding him. If the man had been malingering, it was to be concluded that by that time he would be no longer speechless, there being nothing further to be gained by the imposition. The following was the reply I received :—

"*Wiveliscombe, 5th June*, 1861.

DEAR SIR,—I was not able to go over to Crowcombe until yesterday (that village being nearly ten miles distant), and then, unfortunately, did not see Private James Davis, as he had gone up on the quanstocks, and after waiting an hour, I was obliged to return. I took the opportunity of making inquiries among the villagers, at the rectory, at the public-house, and the blacksmith's, and I thus gathered that the man is unable to speak, and the history he gives (in writing) tallies with the account you wrote to me, of his inability to articulate. It appears he either writes what he would say, or makes signs. He lodges with a pensioner named Farthing, who is almost totally blind, and this morning, both the men having heard that I was making inquiries, came over to my house, and I had an opportunity of examining the man. I have seen something of malingering, and I do not think there is anything of the kind in this case, &c.*

"I am, Sir, &c.

(Signed) "WM. LEGGE."

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* "*Fort Pitt, December* 1862.

"I have since received further details, which tend to give additional interest to the case of this soldier. At the latter end of July, 1860, he suddenly recovered his voice while in a state of excitement. The following is the account given to me of the occurrence by Major Bace, Staff Officer of Pensioners in the district where the man resided :—'He was in a public-house at Crowcombe, with several others, and had been drinking some ale. The landlady wanted to charge him for a pint of ale which he had not had. I have ascertained that he really had not the extra pint he was charged with, and which was afterwards settled. This caused him to become very violent, and when endeavouring to say "The girl is a liar," he found he repeated the words in his natural voice, but not so fully as he could do three or four days afterwards.' The Rev. Mr. Hotham, Rector of Crowcombe, has given me the same account of the occurrence. He writes :—'Several people were present when the recovery occurred, and it was not a little startling to the company, as there had never before been an attempt at articulation. A bystander reported that the colour rushed to his face so as to make him look almost black; the veins in his neck were distended, and there was everything in his look and manner betokening a sudden explosion.' Mr. Hotham adds, in his note to me: 'I feel more and more convinced, from particulars which have come out in the course of this inquiry, that there is not the slightest ground for suspicion that he feigned deprivation of speech in order to escape service in the army, or for any other cause.'"

Major Bace was kind enough to examine the man on the 1st of the present month (December 1862) at my request, and to transmit to me remarks on his state at that time. The Major reports that his articulation is good, free from hesitation or any other defect; that he has no difficulty in pronouncing each letter of the alphabet distinctly; that he can now whistle, but not as well as he could do before his wound; that he can masticate food thoroughly, but that he does so chiefly on the right side of the mouth, the opposite to that principally injured.

This case is of much interest to the military surgeon, from the liability of dumbness, with so little apparent cause, as shown by the sentiments of several surgeons expressed regarding it, being ascribed to malingering; and also with reference to the length of time which elapsed before speech was restored after such an injury.

Professor Aitken, regarding the case from a pathological point of view, considered the injury to the muscular tissue alone sufficient to account for the dumbness; but that, in addition, the inflammatory changes amongst the tissues in the immediate

Class 3.

No wounds of this class occurred during the year.

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vicinity of the ball (which lay embedded amongst the injured parts for twenty-three days) might be expected to disturb the operation of the ninth pair of nerves, without altogether destroying their influence. He made some notes in writing on the case, and I transcribe a portion of them. He says :—

"The detachment of the insertion of the genio-hyo-glossus muscle is a most important feature in the case. By its destruction, the os hyoides could no longer be drawn upwards and forwards with the base of the tongue. The connexions, also, of the tongue with the pharynx and palate would be slackened; a loss of tension power would immediately result, and thus the stream of air from the pharynx into the mouth would be influenced, and the strength of its impulse would be impaired for the formation of explosive consonants. Even the adjustment of the vocal chords might also be impaired for a time by the slackening of the mucous membrane, in consequence of the falling backwards of the tongue.

"The motion upwards and forwards of the tongue being thus limited in the first instance, retraction of the damaged muscular fibres would continue to increase for some time after the injury, and considerable loss of muscular substance would take place as one of its consequences. Subsequently, new attachments of the injured fibres would form, with a diminished range of action.

"The repair of muscle and tendon is a very slow process, and it is slower in proportion as the violence of the injury is greater. It rarely takes less than twelve months to unite thoroughly muscle and tendon and nerves, especially when injured by such violence as a gunshot implies. In this case the muscular fibres were repaired, and function restored in about eleven months after the injury."

Such are Dr. Aitken's observations. But supposing the aphonia to have been wholly due to the physical injury described by Dr. Aitken, would not the restoration of speech have been marked by gradual improvement, in proportion as the injured tissues became repaired and gained strength? May there not have been, in addition to and independent of the structural lesions, an amount of nervous shock sufficient partly to explain the aphonia which followed the accident? We know that temporary aphonia does occur from hysteria, fright, great nervousness, and other such causes. In these cases, the disorder is a functional paralysis, in which the nerves transmit only imperfectly, or refuse to convey altogether, the dictates of the will to the muscles concerned in articulation, but suddenly become obedient, and fulfil their function under the effects of unusual excitement and intensity of volition. To exercise the faculty of speech, not only the organ of sound, the larynx, as well as all the organs essential for articulation—the pharynx, hard and soft palates, tongue, lips, and nostrils—must be in a healthy condition; but also the nervous centres, and the capability of the nerves themselves to convey their mandates so as to excite a co-ordinate action of all the organs referred to, must be healthy and complete also. The sudden recovery of the power of speech in the instance of this pensioner strongly resembles the equally sudden recoveries which have taken place in cases where the aphonia has been caused by extreme nervousness, sudden fear, and hysteria, but was no doubt due, to a certain extent, also to the causes described by Dr. Aitken. An interesting case, but not admitted at Fort Pitt, of complete aphonia following sunstroke in India, occurred during the year 1861; also with sudden recovery of voice after his arrival in England. The following are brief notes of the case :—

Gunner Charles Windram was invalided from Bengal by Staff-Surgeon Hardie, on account of loss of power of speech after sunstroke. There was no loss of sensation, common or special, of the tongue, nor was its power of motion at all impaired. He replied to questions by writing on a slate. He arrived at Woolwich, speechless, in June 1861, and was admitted under "Paralysis." Shortly afterwards, he suddenly regained the power of articulation, while being inspected by a medical officer, and, after observation for two or three days, returned to duty.

Those physiologists who refer the control of the co-ordinate actions required for the due performance of the function of speech to the corpora dentata of the olivary bodies, would doubtless trace the loss of power in this instance to some lesion in their substance, so connected does his medulla oblongata appear to be with some of the symptoms of sunstroke; but no such lesion could be supposed to have followed the stroke of the bullet to account for the dumbness in the case of Private Davis.

Class 4.—Wounds of the Chest.

Seven wounds of the chest were admitted; of these, three were re-admissions.

The first was an injury to the soft parietes only. It was a flesh wound of extensive character, caused by a traversing grape-shot, which entered 3½ inches below the right mamilla, passed beneath the skin, and made its exit one inch and a-half externally, and on the same level. The healing process occupied four months; the wound of entrance closing first. The cicatrices were very large in size, puckered, but non-adherent. The man was discharged to duty.

The second case was also a non-penetrating wound, but with injury to bone. Private Thomas Dyer, 44th Regiment, was wounded at the capture of the Taku Forts, by slugs, in twelve places, on the right side of the chest and lumbar regions. The twelfth rib was injured by one of these missiles, and several pieces of bone subsequently exfoliated; all the other wounds healed quickly. He stated that he passed blood several times by stool after the injury. Some of the wounds appear to have been sinuous in character, and the cicatrices were alleged to cause inability to bend the side without sensation of contraction and pain. He was admitted into Fort Pitt on September 1, 1861, and on the same day a small bullet was excised from the left lumbar region, the opposite side from that where the ball entered. The bullet was lying embedded in a distinct capsule.

The third case, one of Private Robert M'Millan, 78th Regiment, was sent home as an instance of a perforating wound of the chest, but was clearly proved to be one in which the ball, after striking the edge of the sternum at an acute angle, had made a circuit external to the parietes of the chest, passing through the axilla. Injury to the brachial plexus, and a variety of other signs, led to the unavoidable conclusion that the ball had traversed outside the chest.

In a second wound of this kind the ball had traversed the front of the chest from side to side, injuring a rib in its exit. Hæmoptysis followed the injury, and subsequently exfoliation of the bone occurred. Dyspnœa on exertion, and inability to bear the pressure of his accoutrements were the causes of invaliding.

The next case is one of peculiar interest, having been accompanied with that rare complication of a gun-shot wound—general subcutaneous emphysema. The history is as follows: it was chiefly derived from the patient himself. Private Jeremiah Murphy, 40th Regiment, admitted 31st May, 1861, aged 27, a fine muscular man, was struck in the left shoulder on the 27th of June, 1860, at Waitara, in New Zealand, by a musket-ball. The projectile was probably a round one, weighing nearly an ounce—that being the usual weight and shape of the balls used by the New Zealand natives. It was fired from an elevated position. The ball entered 2½ inches beneath the left acromial process, on the external aspect of the shoulder. The cicatrix of the wound is circular, showing the straight direction of entry of the projectile. There was no wound of exit. The ball lodged, and its site has not been discovered. Immediately after he was wounded his arm dropped powerless by his side, his mouth became filled with blood, he became faint, and fell. The spitting of blood continued; so that he expectorated altogether, he thinks, about a pint, chiefly in clots. He never wholly lost consciousness. He was conveyed in a bullock-cart about a mile, over rather a rough road. Emphysema of the left shoulder and of the parietes of the chest on the left side, both anteriorly and posteriorly, extending down to the lumbar region, was present next day. This was mentioned by the surgeon in the few remarks which were sent home with the invalid; no information respecting its subsequent progress or subsidence was given.* There was also pain within the chest, a "catch" in breathing, as if

* Mr. Murray, who went from Australia to New Zealand on the rebellion of the Maori natives, and was attached as an Acting Assistant-Surgeon to the 40th Regiment, and under whose care this case fell, has passed through the Army Medical School with great credit during the present year (1862). He informed me that in the engagement with the Maoris, in which Private Murphy was hit, there were 65 men of the 40th Regiment killed and wounded; and that from the circumstances in which they were placed, and the amount of duty which fell on the two medical officers with the regiment, it was not possible to keep full reports of the cases. But Mr. Murray kept a pocket memorandum-book for noting down special occurrences

from pleurisy, felt—particularly at the *bottom* of the left pleural cavity. According to statement, the dyspnœa was very severe for about a week, and the patient was told he had been constantly wandering during that period. Expectoration of blood and the pleuritic symptoms continued for about a fortnight. The wound healed in about six weeks. Local application of lint to the wound of the shoulder was the only treatment: no venesection was practised. After all active symptoms had subsided, tonics were administered.

The following was the state of the chest noted on his admission at Fort Pitt: "There is an appearance of fulness of the left supra and infra clavicular regions, but the girth of each side of the chest on measurement is nearly equal. No flattening observable. Very slight differential dulness is noted on percussing the left side, near the apex of lung; but the vesicular respiratory sound is normal throughout. The chest expands well on both sides. The man states that he cannot bear the pressure of belts across the chest, and that any fettering in its movements, when he is under exertion, causes much feeling of oppression. He states also, that he has some stiffness about the shoulder and tenderness on pressure in the neighbourhood of the cicatrix. A small conical exostosis can be felt almost immediately below the cicatrix, projecting from one side of the bicipital groove. The bone was probably struck by the ball in this situation."

There are many points of importance in this case. A recovery, after an undoubted wound of the lung, so perfect that the respiratory murmur should be left normal throughout the organ, without any depletion by venesection having been had recourse to, is a fact that would have been regarded as little short of an impossibility in the time of the Peninsular campaigns. It serves, however, to strengthen the experience afforded by several similar cases which occurred during the Crimean war. It seems not unworthy of consideration how far the partial collapse of the lung, which must have been caused by the pneumo-thorax in this instance, may have prevented general adhesion between the pulmonic and costal pleuræ, and modified other accidental consequences which are not unfrequently found to attend chest-wounds involving the organs of respiration.

This case also affords an example of lodgment of a bullet in the chest—probably in the lower part of the pleural cavity. The fact that the pleuritic pain was referred chiefly to this situation, notwithstanding its remoteness from the site of injury—and this, too, almost immedialy after the wound was received,—points to this conclusion. The bullet is now probably fixed by lympth thrown out at the time the pleural membrane was in a state of inflammation; so that its presence is not rendered perceptible by changes of posture. A sergeant of the 41st Regiment was wounded in the trenches before Sebastopol by a rifle-ball, which passed through the apex of the left lung, and fell to the bottom of the pleural cavity. He survived the wound ten days. At the post mortem examination the bullet was found embedded in lymph on the upper surface of the crus of the diaphragm. Mr. Guthrie and others have recorded similar cases.

The next two cases are illustrations of *perforating* wounds. The first occurred to Private William Moore, aged 41 years, 2nd Battalion Rifle Brigade, of 20 years' service, and the following are the notes taken on his admission at Fort Pitt on July 12th, 1861: "When engaged in loading his rifle on the 28th of November, 1857, at Cawnpore, he was wounded in the lower part of the left side of chest by a musket-ball. The projectile was fired from a distance of about seven or eight yards by a Sepoy, who was standing on the same level as himself, but a little to his left. The ball entered about three inches below the left nipple, and two and a quarter to the left of the mamillary line, fractured the eighth and ninth ribs, and made exit on the same level, six inches external to the spine, fracturing the tenth rib in passing out. His stomach was

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(a provision which no surgeon in the field should be without), and he was kind enough to let me peruse the notes which he then made. These confirmed the account of the case given above, especially the plouritic pain at the lower part of the chest ("about the eleventh or twelfth rib"), and the extent of the emphysema. Mr. Murray said that there was a remarkable absence of symptoms in the further progress of this case, and that had it not been for the expectoration of blood and emphysema, no one would have believed the lung had been wounded.

empty at the time. He immediately fell forward. He states that immediately he received the wound he fell down upon his face, and that almost in an instant blood came profusely from his mouth. He did not become unconscious, but says he remembers every circumstance connected with the injury. He lost more blood by the mouth than by the wound. A piece of his tunic was taken out of the opening in front on the morning after he received his wound. He spat up small quantities of clotted blood, at intervals, all the time he was in the field-hospital, which was nearly two months. Considerable hæmorrhage also took place at first from the wound of entrance, the blood being frothy; and for some time, with the act of coughing, air was forcibly expelled through this opening, so as even occasionally to blow off the piece of wetted lint which was used for a dressing. He lay on his right side during the whole course of treatment, which consisted only of cold applications. No bleeding by leeches or other means was practised. After two months he was sent to Allahabad, where he remained one month, and thence proceeded to Calcutta. After another month's interval in hospital at this last station, he embarked for England. During these periods, and in the course of the voyage home, eighteen pieces of bone were removed from the entrance wound and five from the wound of exit.

On his arrival at Fort Pitt, in July, 1858, the anterior wound was healed; but the posterior wound was still open, and giving issue to a purulent discharge connected with necrosed bone. Subsequently a large sequestrum was removed by forceps from this situation. In September, 1858, he went on furlough for two months, and during this period the wound of exit became healed. In February, 1859, he was sent on recruiting service, and he continued in good health until December of the same year, when the wound of exit again became open, and another small sequestrum was detached.

On examining the site of the wound in 1861, both the ninth and tenth ribs were found to be united by a fibrous elastic material, which yielded on the slightest pressure. There was much tenderness about the cicatrix. The left side of the chest expanded equally with the right, and other symptoms of pleuritic adhesions existing to any great extent were wanting. There was no marked dulness on percussing the neighbourhood of the wound, but the respiratory murmur was feeble and distant.

The second case occurred to Private Patrick Farrell, invalided from the 45th Regiment, and the following is an abstract of its history: He was wounded at Lucknow, on the 8th of September, 1857 (being then in the 90th Regiment), by a musket-ball fired from an elevated position at a distance of about seventy yards. The ball entered the chest between the ninth and tenth ribs (fracturing the ninth and grooving the tenth) in the central axillary line, and emerged about half-an-inch external to the spinous process of the first lumbar vertebra. The scar of exit remains so deeply depressed and adherent, that the ball must have passed out from within, and the idea of an external circuit cannot be entertained; but whether the lung or liver were ever wounded admits of question. This invalid was first admitted at Fort Pitt on the 10th of October, 1858. Unfortunately the remarks in the medical history sent with him on that occasion from India give no assistance in forming a correct diagnosis as to any visceral injury. He was discharged to duty from Fort Pitt on October the 15th, 1858, and not again admitted until October 1861. It was stated by the invalid himself, that hæmoptysis followed the injury; and that some pieces of bone from the fractured rib were eliminated through the entrance-wound in the progress of cure. Both wounds became healed in about three months. On his last admission at Fort Pitt, on the 12th of October, 1861, he was suffering from softening tubercle in the apex of the left lung, and indications of tuberculous deposit in the right lung; and these were the immediate causes of his being invalided from further service.

Classes 5, 6, and 7.

No wound of these classes occurred.

Class 8.—Wounds of Upper Extremities.

Eighteen wounds of the upper extremities were admitted, of which five were re-admissions. Eight of these were simple flesh wounds, two with

fracture of the clavicle, one with fracture of the scapula, one with compound fracture of the humerus, one with injury to the structures of the carpus and metacarpus, and five with injury to fingers.

None of the simple flesh-wounds presented features of special interest. Contractions, and partial stiffness of joints from long position during treatment, were the chief causes of invaliding.

Of the two cases of fracture of clavicle, one was united, the other remained ununited by bone. In the united fracture, there was loss of substance to an inch in length. In the ununited case, ligamentous connection existed; fibrous bands joining the two ends of a fragment of bone, which had been tilted up in an upright position, to the corresponding remaining portions of the clavicle which had remained in situ. This fragment was one inch and a-half long. There was complete paralysis of the arm, but a slight power of flexion remained in the wrist and fingers, which were, however, permanently contracted to a considerable extent. The injury occurred by an accidental discharge of a rifle in the Taku forts after its capture.

The fracture of the humerus remained ununited. The patient, Private R. Fitzgerald, 44th Regiment, was wounded at the attack on the Taku forts, by a slug, and was placed on board ship two days afterwards. The man stated that he had been in good health previous to the injury, and had never had venereal disease, or taken mercury. The flesh wound healed about two months after the receipt of the injury. When admitted into Fort Pitt the arm was much wasted, and the humerus was remarkably slight in size.

The wounds involving the hand and fingers do not call for special remark. In two instances which occurred in New Zealand, the injuries were caused by accidental discharge of rifles before the enemy, from the triggers becoming entangled in the bush through which the men were moving.

Class 9.—Wounds of Lower Extremities.

Twenty admissions occurred in this class; of these, six were re-admissions from former years.

Ten of the twenty cases were simple flesh wounds and contusions. One of these is worthy of notice, having been sent home as a case of penetration of the knee-joint. The diagnosis had been chiefly derived from the escape of what appeared to be synovial fluid from the joint; but from the history, and close examination, it appears more probable that this fluid had escaped from the bursa below the ligamentum patellæ. The case was the following:—Private James Hogan, 40th Regiment, aged 27 years, of 9 years' service, was wounded in the engagement with the Maories in New Zealand, on June the 27th, 1860. He was kneeling on his right knee, the left being flexed rectangularly, when a ball struck the latter about half an inch below the lower margin of the patella, in the position in which it was then placed. Blood and a synovial-like fluid escaped from the wound. The man was, however, able to walk after the injury half a mile through high ferns. There was no wound of exit, the ball having bounded back from the tense ligament with which it came in contact. The day after there was considerable effusion into the joint, and periarticular swelling and redness. On June the 30th the inflammatory symptoms had almost disappeared, and the wound was nearly healed. Had the synovial membrane been opened by the ball, the synovial fluid could hardly have accumulated in the joint as described, but would have continued to flow through the track made by the bullet; the projectile itself could scarcely have escaped from entering and lodging in the articulation at the time the wound was inflicted; and suppuration in the joint would have followed. Moreover, we know that in the flexed position of the knee, the ligament of the patella, being tightly stretched, presses back the considerable cushion of fat, which lies between it and the synovial membrane, towards the interior of the joint, so as to fill up the space which would be otherwise vacant. In this way the synovial membrane is removed farther back, and protected from the risk of being directly injured on the occurrence of a wound in the direction above-mentioned. The surgeon in charge of the ship in which this invalid returned to England, stated that he walked about without the least difficulty during the voyage; but, on arrival

at Fort Pitt, the man complained of stiffness of the joint and lameness. No abnormal condition, nor indication of impaired function, could be detected in the knee, and the man was discharged to duty.

The following case of flesh wound is instructive, in showing certain consequences of the lodgment of a bullet in the glutæal region :—Private Andrew Madden, 35th Regiment, aged 25, was wounded when on field service in the Kareen jungles, Burmah, on the 6th of June, 1856, by a musket bullet. The ball entered three inches below the anterior superior spinous process of the ilium on the left side, passed backwards, and buried itself in the glutæal muscles. No attempt was then made to extract it, as it could not be felt. The wound gradually healed, but he suffered afterwards from pain which was attributed to the effects of rheumatism.

On the 24th of May, 1857, this soldier was admitted into hospital at Rangoon, for what was supposed to be a slight attack of intermittent fever. At the same time the glutæal region became painful, and a hard, circumscribed, deep-seated swelling was felt on pressure. This swelling increased. On August the 26th, 1857, an incision two inches in length was made ; some pus was evacuated, but no bullet could be discovered, though examination was made for it. The patient was left in hospital at Rangoon on the regiment being moved to Bengal.

On April the 28th, 1858, he was admitted at Fort Pitt as an invalid from Burmah. There was then a small opening in the situation of the above-mentioned incision remaining unhealed ; and, on a probe being passed into this, a sinus was found to lead deeply into the buttock. The man complained of pain in the groin, and along the crest of the ilium, and occasional stiffness extending along the back of the thigh down to the ham. He walked with a slight halt, and stated that if he walked quickly, the pain in the inguinal region was increased. It appeared evident that the open track in the glutæal region led to the site in which the bullet was lodged, and on the 10th of May, 1858, a longitudinal incision was made by the side of the sinus by Staff-Surgeon Dr. Williamson, and the ball extracted. The wound was healed in a month, and on June the 15th the man was discharged to duty.

On the 18th of November, 1861, this soldier was again invalided from the depôt of his regiment, as unfit for duty, from the effects of his wound. He complained that the limb became quickly tired on exertion of any kind, and that he experienced difficulty in mounting steps. There was scarcely any perceptible wasting of muscles, and it was thought that he exaggerated his disability. The adhesions, however, which were probably contracted from the effects of the inflammation, suppuration, and sinuses resulting from the passage and prolonged lodgment of the foreign body, would, doubtless, sufficiently account for the inconveniences of which he complained. At this period a very distinct slit in the fascia lata still marked the site of the original entrance of the bullet, and I am led to believe, from repeated observation, that the openings made by bullets in such fascial aponeurotic coverings never do become united.

In the remaining cases of this order, the same general causes of invaliding existed, which have been already noticed in previous reports.

In four cases the bone was injured *without fracture*. Periostitis, and subsequent exfoliation of superficial layers of bone, with adherent cicatrices, were the consequences which unfitted the soldiers for further service in these injuries. Six were complicated *with compound fracture*, two being fractures of the femur, two of the tibia, and two of bones of the great toe.

Both of the cases of fracture of the femur occurred in soldiers invalided from New Zealand. They were both near the lower third, and neither appeared to have been aggravated by comminution or splintering. The following are brief histories of these cases :—

Private John Goddard, 65th Regiment, aged 41, was wounded at Waitara on the 17th of March, 1860, by a musket ball, fired from an elevated position, at a distance of about 300 yards. He was walking forward at the moment he was hit. The projectile entered the external aspect of the right thigh, about four inches above the knee joint, fractured the femur in the lower third, evidently without splintering. There was only one opening in the integument, and the projectile was supposed to have lodged. He remained under treatment

at Taranaki until August, when he was sent to Auckland, and from thence invalided to England.

On his admission at Fort Pitt, on the 25th May, 1861, no indication of the presence of the bullet could be found. He was in good general health, had gained great power in the limb, and was able to walk without any difficulty or uneasiness, with the aid of a stick. The scar of entrance was small, and beneath it was felt a very defined and sharply-margined aperture, through the fascia. The femur was shortened about one inch and a quarter.

The second case was that of Private George Wilmot, 65th Regiment, aged 23 years, who was wounded at Taranaki, New Zealand, on the 6th of November, 1860. According to statement, he was lying on his left side, with his right leg slightly elevated, and was engaged in loading his rifle, when he was struck by a musket ball, which entered the outer aspect of his right thigh, two inches and a half above the knee joint. The ball pursued a course upwards, and slightly forwards, and lodged just below, and external to the trochanter major, from which situation it was excised. In its passage it fractured the femur, in the inferior portion of its middle third. Shortening from one inch and a half, to one and three quarters, had resulted. This invalid was admitted into Fort Pitt on the 3rd of December, 1861. The fracture was firmly united, and the motion of the knee joint was not at all impaired. The cicatrix of the wound of entrance was thickened, and slightly elevated, but no opening was perceptible in the fascia. No sequestrum of bone had ever come away.

There was little doubt in my mind that this was not a case of true compound fracture, or, in other words, that there had never been any communication between the external wound and the wound of the bone. I do not think the fascia even had been penetrated, for I have never yet known an instance where a gun-shot penetration of fascia did not, as before remarked, leave evident indications of the injury. It appeared to me that in this instance the ball must have fractured the femur by the force of its first collision with the limb, and, without penetrating the deeper tissues, have been deflected by the impact subcutaneously upwards to the trochanter. In addition to the absence of any slit in the fascia, the fact of no sequestrum having been detached, and especially the direction taken by the projectile, supported this view of the case.

The two cases in which the tibia and bones of the foot were fractured, do not call for special remark.

Class 10.

No cases of this class were admitted.

Class 11.—Wounds of Joints.

The following case of perforation of the left wrist joint is so far worthy of notice, as showing how extensive an injury of the articulating structures may occur, and the hand be yet preserved. It will also serve to show, that though motion only of a most limited extent may be retained, still that this may be of value to the possessor. In this instance the rifle was discharged almost in immediate contact with the joint injured. All the movements of the hand and wrist were lost, but the use of the metacarpal bones of the thumb and little finger were preserved, so that they could be brought into apposition.

The following were the notes taken on the invalid's admission at Fort Pitt, on May the 3rd, 1861:—

Private William Quinn, 44th Regiment, aged 34 years, when assembling for morning parade, on the 16th of March, 1858, having supported his firelock against a wall, was in the act of holding his hand over the muzzle, according to statement, to save it from falling, when it went off, and a ball passed through his hand. He acknowledged that he had been drinking for several days before the accident, and that in consequence he had been so stupified as not to be able to account for the piece having been loaded; he supposed he must have done it without thinking what he was about. He was tried by court martial, and the court found him guilty of self mutilation. On examination, at the time of the accident, it was found that the ball had passed through the wrist joint. Con-

servative treatment was adopted, and proved successful ; but perfect anchylosis of the wrist and carpal joints had resulted. When examined at Fort Pitt, a deep retracted cicatrix marked the entrance wound in the flexor aspect. There was general contraction and wasting of the fingers. The distal phalanx of the thumb was fixed in a flexed position. The metacarpal bone of the thumb was freely movable, and this was the only part of the hand in which mobility was not at all impaired. The little finger was flexed in all its joints, but could be made to meet the thumb, when the latter was opposed to it ; and by means of this slight residue of manual function, the man was enabled to grasp instruments, and perform many little acts for himself of considerable utility.

Class 12.—Wounds of Nerves.

Three cases of this class occurred, the brachial plexus being injured in each instance. Two of the patients were invalided from the late war in China, and one was a re-admission from the Indian mutiny.

In the first case, the ball, after injuring the axillary nerves on the left side, passed towards the thoracic parietes, and lodged. The symptoms showed that there had been a severe percussion of the chest and its pulmonic viscera. Paralysis and anæsthesia of the left arm were the causes of discharging the soldier from further service. The following are notes of this case :—Private William Barrett, 44th Regiment, was wounded in the attack on the Taku Forts, on the 21st August, 1860, by a matchlock ball. He was kneeling at the "Present," when he was struck by the missile, which was fired from an elevated position.

The ball entered the left shoulder, three inches below the acromion process, about one inch and a quarter above, and one inch external to the anterior axillary fold. The left arm became immediately powerless. In the few remarks which were sent with this patient from the Hospital Ship, "Lancaster Witch," there was no mention of hæmoptysis having occurred ; but the invalid himself stated that two days after the wound some small quantities of clotted blood were expectorated, and that this symptom continued for a week, with severe pain, and dyspnœa. Private Barrett was admitted into Fort Pitt on the 18th of April, 1861. At that date, the left arm, with the exception of the shoulder, was anæsthetic, and its extensor muscles paralysed. The brachial artery pulsated very indistinctly, and seemed to be partially closed. The chest expanded freely and equally on both sides. The percussion note was somewhat higher and shorter on the left side anteriorly, while the pectoral fremitus and vocal resonance were diminished. No indication existed to show the place of lodgment of the ball. This case was sent home as a penetrating wound of the lung, with lodgment of the ball within the chest ; but neither the history of the injury, progress of symptoms, nor condition of the invalid on his arrival in England, would indicate his having laboured under so severe a wound, with such a dangerous complication. The chest was probably struck by the bullet, after wounding the nerves, in such a way that a certain amount of contusion of the lung resulted, giving rise to the usual symptoms, and followed by some pleuritic inflammation ; but the chief injury was that to the axillary plexus.

In the second case, the ball traversed the axillary region, and was followed by partial paralysis, anæsthesia, and wasting of the forearm and hand. The following account was obtained from the invalid himself ; no medical history was received :—

Private Emanuel Carlick, 44th Regiment, aged 28 years, was wounded at the attack on the Taku Forts, on the 21st of August, 1860, by a matchlock ball. It entered the right axilla, about an inch and a half above the inferior margin of the pectoralis major, and made its exit a little anterior to the margin of the latissimus dorsi muscle, in the posterior angle of the arm-pit, injuring the brachial plexus in its course. The arm immediately dropped powerless by the soldier's side ; numbness and wasting of the forearm followed ; the hand became fixed in a flexed position at the wrist joint ; while the phalanges of the fingers, with the exception of those of the second and third fingers, which were slightly flexed, remained extended. A minimum of mobility was preserved ; a little more power of motion existed in the thumb and forefinger than in the other fingers. The wasting of the hand was considerable Blebs

occasionally appeared, until October, 1860, but since that date there has not occurred any eruption on the anæsthetic integument.

The third case was an injury to the cervical and brachial plexus, and was associated with probable injury of the œsophagus. Private Robert Orprey, 1st Battalion 20th Regiment, was admitted on the 27th of July, 1861. He had been wounded in the neck, in a street-skirmish, after the capture of Lucknow, on the 18th of March, 1858. He was kneeling at the "Present," and his neck was bare at the time. The musket-ball which struck him was fired from a distance of twenty yards, from a slightly elevated position, nearly directly opposite to him. The projectile entered over the cricoid cartilage, or rather at the crico-thyroid space, a little to the left of the mesial line; passed backwards, and slightly downwards; and made its exit just above the superior inner angle of the scapula on the left side. It must have passed beneath the sterno-mastoid muscle, and then superficially to the place of exit. The left arm is stated to have become paralysed and very anæsthetic immediately after the receipt of the wound. On admission, in July 1861, the elbow-joint was contracted in a state of flexion, and the head was bent over towards the left side from contraction of the neck. He had been sent to try modified duty in April, 1859; but was found to be unable to bear the pressure of his stock on account of the pain caused by it in the neck. The pressure of his shoulder-belt also caused a feeling of weakness and numbness of the arm on the affected side.

Amputations.

Two cases of amputation after gunshot wounds were admitted. One was an amputation of the femur in the middle third, on account of secondary hæmorrhage after a gunshot wound of the leg in China. The second was an amputation of the middle finger of the left hand, after a wound received at the final assault of the Redan. But in this case the invalid was discharged from further service for other disabilities.

Sabre Wounds.

Six sabre wounds were admitted during the year: five being polemical, and one inflicted by a comrade. The five polemical wounds were situated as follows:—1st. The right side of the neck and ear, and also of the right elbow; 2nd. Left fore-arm, the ulna being grooved by the stroke of the weapon; 3rd. Left thumb, the extensor tendon of the proximate phalanx being divided; 4th. The back, the attachments of the lumbo-dorsal muscles to the spinous processes of the 10th and 11th dorsal vertebræ being divided, and a permanent gap resulting from retraction; 5th. Right hand, the extensor tendons of the thumb being injured. The results of the wounds in the remaining case, in which the injuries were inflicted by a comrade, were of an aggravated character. Paralysis of the left facial nerve, and contraction of the right elbow-joint, were the immediate causes of the invalid being disabled for service. The following notes were taken of this case on admission at Fort Pitt:—Corporal Alfred Moxon, 17th Lancers, presents the cicatrix of a sabre wound, inflicted by a comrade on the 3rd of July, 1860, at Secunderabad. It extends from the centre of the left supra-orbital ridge, where a distinct groove is felt in the bone, downwards and outwards across the lower third of the external ear, as far as a little behind the mastoid process of the same side. The cicatrix over the zygoma is deeply depressed and adherent to the temporal muscle, which was no doubt partially divided. All the muscles supplied by the facial nerve, which must have been divided close to its entrance into the face, are perfectly paralysed. There is a second cicatrix over the parietal bone, which was exposed by the wound. A third cut, inflicted at the same time, injured the internal condyle of the right humerus; and has led to contraction of the elbow-joint in a state of rectangular flexion. Pronation and supination of the fore-arm are free. Perfect anæsthesia of the little and ring-fingers, and considerably impaired power of mobility, have resulted from injury to the ulnar nerve.

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